Medical Terminology

A Programmed Learning Approach to the Language of Health Care

Second Edition

Marjorie Canfield Willis







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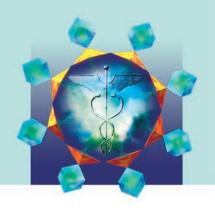
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Dedicated to the memory of

Dell A. Canfield,

my father, my inspiration



Preface to the Student

SUMMARY OF OBJECTIVES

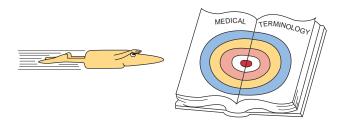
Upon completion of this text, you will be able to:

- 🦊 Describe the origin of medical language.
- Analyze the component parts of a medical term and use basic prefixes, suffixes, and combining forms to build medical terms.
- Explain the common rules for proper medical term formation, pronunciation, and spelling of medical terms.
- Define basic terms and abbreviations used in documenting health records.
- Identify common pharmaceutical terms and abbreviations used in documenting medical records.
- Identify the common forms used in documenting the care of a patient.
- Identify common anatomical terms related to the major systems of the body.
- Identify common terms related to symptoms, diagnoses, surgeries, therapies, and diagnostic tests related to the major systems of the body.
- Explain common terms and abbreviations used in documenting medical records related to the major systems of the body.

GETTING STARTED

Goals and Planning

To reach the goal of learning the language of health care, you'll need a reasonable plan for completion. Follow the study path that this text and/or your instructor provides, and work the necessary study time into your personal schedule.



Organizing the Starter Set of Flash Cards

A "starter set" of common prefixes, suffixes, and a selected number of combining forms are provided on flash cards at the back of the text. These cards are a base on which to build, and you should review them often. Each component in the starter set is numbered and colors coded according to division: prefixes are printed on peach cards, combining forms appear on purple cards, and suffixes are found on green cards. The term component is printed on the front of the card, and its meaning, including a term example, is on the back. Reinforce your learning by drawing lines to separate the components in each of the term examples, and write definitions for each in the margins.

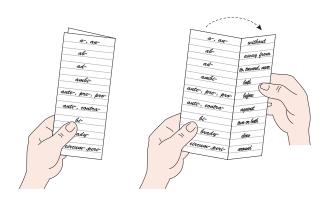
Using a punch, put a hole in the top of each flash card. Loop each card through a key chain or ring holder to make a "rotary file." This method keeps groups of cards together and prevents them from becoming lost or scattered. Within this file, group together associated cards

for components related to color, size, position, direction, and so on.

Making Additional Flash Cards

It is highly recommended that you make flash cards for all of the additional term components introduced in each body system chapter. You can even extend the use of the flash cards to include abbreviations, symbols, and terms found throughout the text. The act of writing out your own cards gives you an added memory boost.

To create additional flash cards, you can follow the example of the cards provided in the starter set (using $3 \times 5''$ cards). If your stack of flash cards becomes large and cumbersome, you may want to try the **frugal flash card** method illustrated below, so named because it consolidates paper and is inexpensive.



To create frugal flash cards:

- 1. Fold a piece of $8\frac{1}{2} \times 11^n$ lined paper in half lengthwise, creating two columns.
- 2. Write the word component, symbol, or term on the first line of the first column, and write its definition on the **same** line in the second column.
- 3. Skip a line and write the next word component, symbol, or term, and write its definition on the **same** line in the second column.
- 4. Continue listing terms with their corresponding definitions until you reach the bottom of the paper.
- 5. Fold the paper at the lengthwise crease so that the word component, symbol, or term is listed on one side of the paper and

the definition appears on the other side of the paper. This allows you to flip from one side to the other, "flashing" and reinforcing the meanings of the terms. Use the other side of the paper in the same way.

Snatching Moments!

Carry your flash cards with you at all times. During most days, there are times when you can snatch a moment to use your flash cards. You will feel less stress when waiting in a line or for an appointment if you know that you can use that time for studying.

STUDY TIPS

Using Your Senses

An effective memory depends on intricate processes that recall mental images of sights, sounds, feelings, tastes, and smells. For this reason, try to include as many senses as possible in the process of reinforcing learning.

SEE IT	Employ your visual sense (sight) by making and repeatedly reviewing your flash cards.
SAY IT	Pronounce each component out loud three times as you flash each card to reinforce your auditory sense (hearing).
WRITE IT	Write and rewrite responses to programmed review sections before highlighting the correct answers. Make flash cards by hand using pleasant colored paper and ink to satisfy your kinesthetic sense (feeling).

Mnemonics Can Help

Mnemonics, referring to any device for aiding memory, is named for the goddess of memory in Greek mythology. Mnemonic techniques link things to be remembered with clues for their recall using the stimulus of images, sounds, smell, touch, etc. Consider the following applications:

- Make up rhymes or stories that help to differentiate between meanings. For example: peri-, the prefix meaning "around," is often confused with para-, the prefix meaning "along side of." Use the two components in a sentence to compare their meanings; for example, I sat para (alongside of) Sarah on the merryperi-go-around. Often the most absurd associations can help you to remember. It doesn't matter if they don't make sense to anyone but you!
- Make up songs and rhythms to help remember facts. Take a song you are familiar with like "Row, row, row, your boat . . ." and insert words with definitions that are in tune with the song.
- Draw pictures depicting term components for reinforcement.

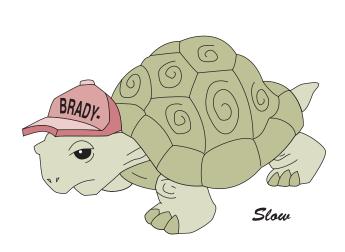
Memory Drill

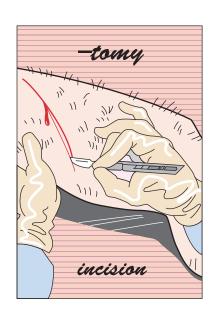
Give yourself a memory drill by listing word components, symbols, or terms on one side of a paper and then filling in the definitions from memory. Write corrections in red ink. Make a list of the incorrectly defined components on a separate paper, and complete the drill again. Repeat this process until you have identified which terms you most frequently get incorrect. Spend additional time studying those troublesome terms.

ADDITIONAL RESOURCES

Take advantage of the many fun and interactive learning activities provided on the CD-ROM included with this text. You'll find a variety of exercises to help you remember medical terminology and to reinforce what you've learned in the text, including:

- Exercises by Chapter unscored exercises allow you to choose the types of activities that best suit your learning style, including:
 - o multiple choice, fill-in-the-blank, and true/ false questions to support learning
 - o *figure-labeling* exercises to reinforce your knowledge of both medical terms and basic anatomy
 - o matching games in which you match combining forms or terms with defini-
 - o spelling bee to help you recognize and correctly spell medical terms
 - o case studies that use actual medical records so you can apply your learning to real-world examples
- Review or Test Mode study a single chapter or multiple chapters in a Review or Test environment to test your knowledge; question types are randomized and include multiple choice, fill-in-the-blank, true/false, and spelling bee



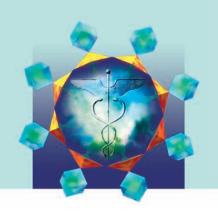


- **Pronunciation Drill** audio pronunciations organized both A-to-Z and by chapter; select individual terms to hear the pronunciation, or "play all" terms from a chapter sequentially
- Dictionary electronic glossary of all key terms from the book organized both A-to-Z and by chapter; definitions provided by Stedman's
- **Flash Cards** interactive flash cards that can be reviewed electronically

Answers to Medical Records For Additional Study questions

READY, SET, GO!

Everything is laid out for you to proceed with your study. The techniques employed here have proven beneficial in learning and are geared toward efficient memorization. Be creative and enjoy the learning process!



Preface to the Instructor

The second edition of Medical Terminology: A Programmed Learning Approach to the Language of *Health Care* provides a sequential, programmed process for learning medical language that is intended to meet the needs of students working independently or within a classroom. The approach is self-directed. Learning segments are presented in self-study increments followed by programmed review frames for immediate feedback and reinforcement. Diagrams, illustrations, and term tips support learning segments, and practice exercises at the end of each chapter provide additional reinforcement. Learning builds from an understanding of the origin of medical terms and basic term construction, to the comprehension of more difficult terms and concepts encountered in relation to the body systems and medical specialty areas. The process culminates in applying the knowledge to understanding selected medical records.

TEXT OVERVIEW

The first two chapters deliver the basics for understanding the language of health care. Chapter 1 introduces basic term components (prefixes, suffixes, and a selected number of combining forms) and shows how these structures are combined to form medical terms. Rules of pronunciation, spelling, and formation of singular and plural forms are included. Medical word components introduced in this chapter are used repeatedly throughout the text. They are included in the starter set of flash cards for medical term components in the back of the text. Chapter 2 explains how medical terms will be learned and reinforced throughout the text using health records. Common forms, formats, abbreviations, symbols, and

methods of documenting patient care are introduced. This helps students understand basic communication between professionals, including physician/provider orders and prescriptions. This chapter prepares students for medical record analyses in succeeding chapters.

Chapters 3 through 15 cover terms related to body systems. Additional combining forms are introduced along with terms related to symptoms, diagnoses, tests, procedures, surgeries, and therapies. After mastering the programmed portions and review exercises, completion of medical record analyses provides further reinforcement of learning through application of knowledge.

The Student CD-ROM included with the text contains additional activities to reinforce learning. The Exercises by Chapter module presents a variety of activities, including multiple choice, true/false, figure-labeling, fill-inthe-blank questions, spelling bees, and matching games, so the student may choose those that that best match his or her learning style. The Review or Test Modes option allows the student to simulate a true testing environment, and allows them to study a single chapter at a time or to study content from multiple chapters. Other activities include a pronunciation drill with 2,000 terms (organized both alphabetically and by chapter), a glossary of terms from Stedman's Medical Dictionary, electronic flash cards, and answers to the Medical Record Analyses: For Additional Study included in the

NEW TO THIS EDITION

• Chapter Checklists at the beginning of each chapter outline learning tasks related to the text and accompanying CD

- Summary of Chapter Abbreviations and Acronyms at the end of each chapter
- Summary of Chapter Terms with pronunciations and page references at the end of each chapter
- New and revised photographs illustrating pathologies and the latest health care technology
- Addition and clarification of pertinent terms throughout the text
- Expanded programmed review sections
- Addition of up-to-the-minute information regarding medical abbreviations and symbols that are deemed to be error prone and dangerous

SPECIAL FEATURES

- A Student CD-ROM with a variety of learning activities to reinforce understanding
- An online Faculty Resource Center for instructors at thepoint.lww.com, with PowerPoint slides, a ready-made testbank, and additional activities and ideas for use in the classroom
- A starter set of common medical term components on flash cards
- Self-study instructional increments followed by programmed reinforcement
- A unique health record orientation in Chapter 2
- Medical Record Analyses at the end of each body system chapter
- Relevant, full-color illustrations
- Practice Exercises for each chapter to meet all learning styles and needs
- Anatomy review with labeling exercises
- Term Tips related to spelling, common pitfalls, and more
- Three valuable appendices, including:
 - o a glossary of medical term components (prefixes, suffixes, and combining forms)

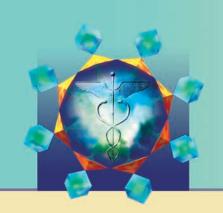
- listed both from term component to English definition and from English definition to term component
- o a glossary of medical abbreviations and symbols
- o commonly prescribed drugs, including therapeutic classifications

INSTRUCTOR RESOURCE CENTER AT thePOINT

Visit the Point at http://thepoint.lww.com/ WillisProgrammed2e to access resources designed specifically to help instructors teach more effectively and save time. There you'll find:

- Instructor's test generator with more than 500 questions, encompassing individual chapter tests and a comprehensive exam
- *PowerPoint slides* for each chapter organized by learning objectives
- *Lesson plans* for each chapter
- Sample course schedules
- Body system overviews
- Suggestions for classroom enhancement
- Our unique *LiveAdvise tutoring service*
- Image bank
- Customized course content for use with your learning management system, such as thePoint LMS (LWW's exclusive learning management system), WebCT, Blackboard
- and more!

A solid understanding of medical terminology provides an essential foundation for any career in health care. The Medical Terminology: A Programmed Learning Approach to the Language of Health Care, 2nd Edition, product suite makes learning and teaching medical terminology a rewarding and exciting process.



User's Guide

Medical Terminology: A Programmed Learning Approach to the Language of Health Care, Second Edition, is not just a textbook – it is a complete learning resource that will help you understand and master medical terminology. To achieve this, the author and publisher have included tools throughout the text to help you work through the material presented. Please take a few moments to look through this User's Guide to familiarize yourself with the features that will enhance your learning experience.

INTRODUCTORY CHAPTERS

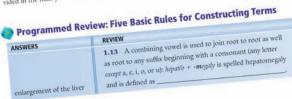
The first two chapters set the stage for learning throughout the text. Chapter 1 provides analysis of **basic term components** and rules for forming, spelling, and pronouncing medical terms.

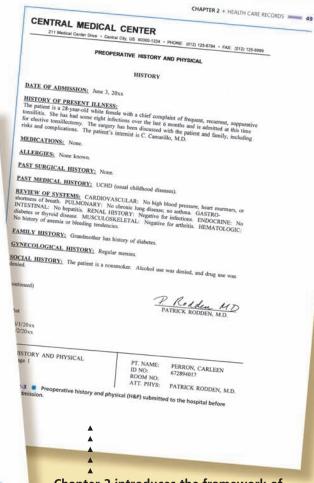


Self-Instruction: Rules for Constructing Terms

Study the following:		FLASH CARD ID#
	MEANING	CF-5
COMBINING FORM	vessel	CF-8
angi/o, vas/o, vascul/o	heart	CF-15
cardi/o	small intestine	CF-17
enter/o	esophagus	CF-20
esophag/o	stomach	CF-23
agetr/O	blood	CF-24
hem/o, hemat/o	liver	CF-40
hepat/o	bone	CF-56
oste/o	urine	FLASH CARD ID#
ur/o, urin/o	MEANING	
SUFFIX		S-1
	pertaining to	S-8
-al, -cal	expansion or dilation	S-9
-ectasis	excision (removal)	S-13
-ectomy	condition of	S-17
-ia	inflammation	S-19
-itis	study of	S-22
-logy	enlargement	S-40
-megaly	creation of an opening	S-41
-stomy	incision	FLASH CARD ID#
-tomy		
	MEANING	P-28
PREFIX	few or deficient	P-30
oligo-	alongside of, abnormal	P-8
para-	around	
peri-		

Once you understand the basics of constructing medical terms, the next steps are to memorize formount term components and to learn the rules for joining medical term components correctly. Study the following five basic rules, and use them to construct words using the components provided in the Rules for Constructing Terms Self Instruction box above.





Chapter 2 introduces the framework of health care documents so that real-life medical records can be used to reinforce the understanding of terms presented in the subsequent body system chapters.

Cardiovascular

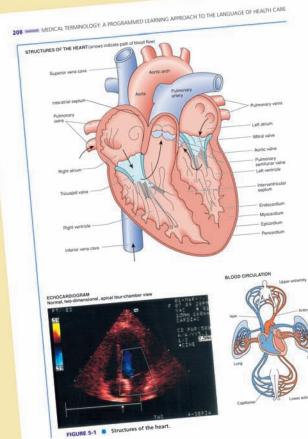
System

CHAPTER CHECKLIST

Use the chapter checklists at the beginning of each chapter to orient you to the materials and to help you set learning goals.

BODY SYSTEM OVERVIEW

Chapters 3 through 15 open with a **body** ▶ ▶ ▶ ▶ system overview. The overview establishes a basis for each chapter, introducing the body system and laying the foundation for your work.



✓ Chapter 5 Checklist	
Read Chapter 5: Cardiovascular System and complete all review segments.	LOCATION
tile Starter cet of a	pages 207-25
Review the starter set of flash cards and term components related to Chapt Complete the Chapter 5 Practice Exercises and Medical Record Analysis 5-1. Complete Medical Record Analysis 5-1 For Advise.	ter 5. back of book
Complete Medical Record Analysis 5-2 For Additional Study. Complete the Chapter 5 Exercises by Chapter. Complete the Chapter 5 Exercises by Chapter.	3-3 5 30-595
Complete the Chapter S Paris	pages 263-264
Review the Pronunciation Drill for the Chapter 5 terms.	CD-ROM (1)
ARDIOVASCE.	CD-ROM

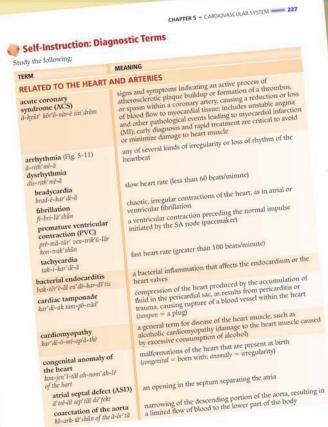
CARDIOVASCULAR SYSTEM OVERVIEW

The cardiovascular system consists of the heart (Fig. 5-1) and blood vessels, which work together to transport blood throughout the body.

- The heart is a muscular organ that pumps blood throughout the body. The neart is a muscular organ that pumps blood throughout the body.
 The heart consists of four chambers: the right atrium and left atrium (upper chambers), and the right ventricle and left ventricle (lower chambers).
- The heart is divided into right and left portions by the interatrial septum and the interventicular septum. Heart valves open and close to maintain the one-way flow of blood through the heart.
- Heart vaives open and close to maintain the one-way now or mood through the near.
 The heart has three layers: the endocardium, which lines the interior cavities of the heart; the flum, which is the thick, muscular layer, and the epicardium, which is the outer the heart is a loose, protective sac called the pericardium.

207

■ ■ ■ Detailed illustrations present a visual overview of each body system being presented.



FRAMES

This book is broken into learning frames. Two types of frames are used: Self-**Instruction frames and Programmed** Review frames.

 The Self-Instruction frames help you memorize key terms and their components.

> The **Programmed Review frames** feature fill-in-the-blank exercises to help you apply what you've memorized.

CHAPTER 5 * CARDIOVASCULAR SYSTEM 217 Review: Anatomic Terms

__. Combined

... The term

_ the left and right

5.15 The term atrium is from the combining form The plural form of this word is ____ upper within _. The right and left atria chambers of the heart. 5.16 Recall that the prefix endo- means with aardio, it refers to something within the endocardium is the structure or ___ of the heart. The suffix denoting structure or tissue is Terminology 5.17 A common prefix that means upon is ___ that lines the cavities A Programmed Learning Approach to the Language of Health Care with cardilo and the which is the_ -ium, it forms the term epicardium, layer of the heart. or_ 5.18 My/o is a combining form meaning_ __forming the outer for heart muscle tissue is 5.19 Peri- is a prefix that means ___ is a protective sac that encloses the Summary of Rules for Learning Medical Terminology with fluid between. Using the term that means pertaining to organ, ... The pericardium the layer closest to the heart is called the visceral pericardium. The outer layer uses the term that means pertaining to wall and is called the parietal_ to the pericardium, the fluid-filled space between these two layers is Using the term that means pertaining 5.20 The ventricles of the heart are so named from the combining form_ ... meaning belly or pouch. The ventricles are the two_ chambers of the heart, 5.21 The term septum refers to an anatomic partition. The

Between the left and right ventricles is the

the four___

septum. The two atria and two ventricles are

heart

tissue

Marjorie Canfield Willis

RULES FOR THE ROAD!

Most medical terms have three basic components: root,

more roots.

The aurille is the term ending that modifies and gives essential meaning to the root. All terms have a suffix.

A prefix is a term beginning used only when needed to further modify the root or roots. Not all medical terms have a prefix.

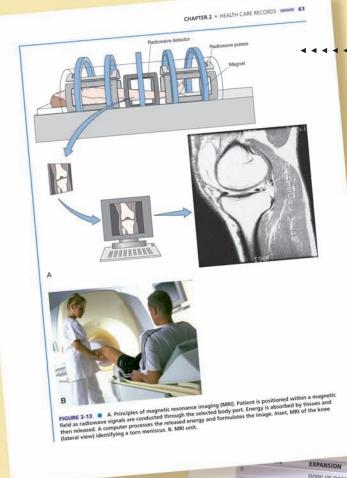
A combining vowel (scauly or of connects a cost to another oot or to a suffix term and vowel is not to a suffix term should be suffix begins with a combining vowel is not used if the suffix begins with a connect. Suffix terms are taken to the suffix begins with a connect.

A combining form is a root plus a combining form is a root plus a combining vowel. Remembering combining forms makes it easy to form and spell medical terms. Many terms can be defined by determining

Micheller's Klower | Lippincott | Williams & Williams

▼

Use the Reveal Card to hide >>>> material in the left column while you complete the exercises in the right column.



Beautiful **full-color art** throughout the book brings the content to life, illustrates the most important information, and makes complex details easy to understand.

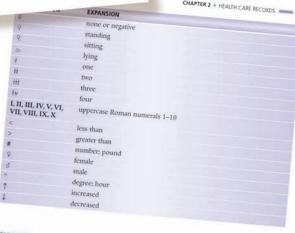
CHAPTER ACRONYMS AND ABBREVIATIONS

A comprehensive list of acronyms and abbreviations appear at the end of each chapter. Use this guide as a guick reference as you work through each chapter.

CHAPTER 2 ACRONYMS AND ABBREVIATIONS CHAPTER 2 . HEALTH CARE RECORDS _______ 81 EXPANSION assessment before before meals right car as desired before noon amount water left ear both ears alive and well CHAPTER 2 . HEALTH CARE RECORDS ...

SUMMARY OF TERMS LISTS

Every **term** introduced in a specific chapter is listed at the end of that chapter. Each is accompanied by ▶▶▶▶ its written pronunciation, abbreviation or acronym (if applicable), and the page number on which it was introduced.



CHAPTER 2 SUMMARY OF DISEASE TERMS

The disease terms introduced in chapter 2 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acute/64 ă-kyūt'	Produce and reinforcement
benign/64	exacerbation/64 ek-zas-ër-bë/shün
bē-nīn' chronic/64	febrile/64 febril
kron'ik degeneration/64	idiopathic/64 id*č-ō-path*ik
de-jen-ër-à shun degenerative disease/64	localized/64
liagnosis/64	malaise/64 mā-lāz*
i-ag-nō'sis tiology/64	malignant/64 mä-ligʻnānt
të-ol'o-jë	marked/64 markt*

						PRACTICE I	EXERCIS	ES	
1. ar	ngiography CF S		rite out the term components (prid suffixes [5]) on the lines below to the meaning of its components: EXAMPLE: pericardial / cardi / al R S around/heart/pertaining to		4444	every chapter the content, prepare for to the test v	r to help you assess your quizzes and with word b fill sp	ncluded at the end of u completely understa progress, and review tests. Put your knowl uilding, figure-labelin -in-the-blank, matchir elling, and medical re- tercises found through	and edge g, ng, cord
2.	DEFINITION: varicosis R DEFINITION: DEFINITION: 4. vasospasm CF	5	Write the letter of the matching 21. atherosclerosis 22. infarct 23. hypotension 24. vegetation 25. embolus	a. hi b. br c. st d. c e. r	igh blood pressure ulging of a vessel tationary clot cramp in leg muscle norn " A pressure hard		th	e book.	
	5. venous R DEFINITION: 6. thrombophl	S	26. occlusion 27. hypertension 28. thrombus 29. constriction CHAPTER 5 * CARDIOVAS ands to the meaning given:	pectorlo	trav. Idi	Superior vena cava	eart by writing the mis	CHAPTER 5 - CARDIOVASCULAR SYSTEM 25 sing words in the spaces provided:	9
9	the the combining form 7. chest 88. vein 99. vessel 100. heart 101. fatty paste 102. circle 103. pulse 104. clot 105. artery	venio aortio cardivi S. S. C. C. S. C.	onds to the meaning givess sphygmio phichic arterio coronio atherio	coronlo cardio cardio cardio atrilo sphygralo thrombio thrombio thrombio anned LEARNING APPROAC D ANALYSIS CU with onset of acu revent a CABG × 4 six severe distress. An E se	That did the electrical percent of the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chart rate enterior chest pain to the heart also chest pain to	Pulmonary veins readiating to the chycardia, and a picture of the heart regular contractions nuractions of the heart ormal electrical con- ret known as a block nent? and a heart attack flering from right heart stive heart failure high blood pressure an enlarged heart ctive findings of the of left ventricle cle cle cle cart phy concraphy		SO. Left Embrary St. Aorse St. Pulmonary Valve St. Vertricular Endocardium Pericardium Pericardium St. St. St. St. St. St. St. St	

FLASH CARDS

A starter set of **flash cards** is **PPPP** included to help you maximize your study time. Use this system to make additional flash cards as you learn new term components and words through the text.

s-5 -centesis

anticontra-

P-5

or opposed to

antitoxic traindicated

re for aspiration tion removal)

ominocentesis

abdomin/o

lapar/o

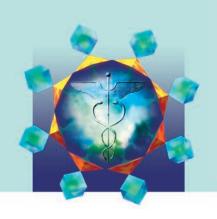
abdomen

<u>abdomin</u>al <u>laparo</u>scopy



CD-ROM

■ ■ Have fun while you learn with the BONUS CD-ROM packaged with this text! You'll find additional exercises for every chapter (including multiple choice questions, figure labeling, fill-in-the-blank questions, spelling bees, case studies and much more!), pronunciation drills, a STEDMAN'S glossary, and electronic flash cards. Use this interactive learning resource to test your knowledge, assess your progress, and study and review for quizzes and tests.



Acknowledgments

It is very gratifying to know that the first edition of this text was so well-received. The experience working with the programmed approach to learning has made me a believer in the method and its effectiveness, and has inspired the work on this second edition.

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M.C.W.

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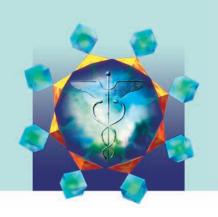
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CHAPTER

1

Basic Term Components

✓ Chapter 1 Checklist	LOCATION
☐ Read Chapter 1: Basic Term Components and complete all programmed review segments.	pages 1-30
☐ Review the starter set of flash cards presenting term components.	back of book
☐ Complete the Chapter 1 Practice Exercises.	pages 31-37
□ Complete the Chapter 1 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 1 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 1 terms.	CD-ROM

INTRODUCTION

Most medical terms have Greek or Latin origins. These terms date back to the founding of modern medicine by the Greeks and the influence of Latin when it was the universal language in the Western world. Other languages, such as German and French, also have influenced medical terms. Many new terms are derived from English, which is considered to be the universal language today. Most of the terms related to diagnosis and surgery have Greek origin, and most anatomic terms come from Latin.

Once you understand the basic medical term structure and know the commonly used prefixes, suffixes, and combining forms, you can learn the meaning of most medical terms by analyzing their component parts. Those mysterious words, which are almost frightening at first glance, will soon seem commonplace. You will learn to analyze each term you encounter with your newfound knowledge and the help of a good medical dictionary.

This chapter includes the most common prefixes and suffixes and a selection of common combining forms. More combining forms and other pertinent prefixes and suffixes are added in following chapters as you learn terms related to specific body systems. This chapter also provides basic rules for proper medical term formation, pronunciation, and spelling.

START NOW

Remove the starter set of flash cards at the back of the text and organize them as recommended in the *Getting Started* section. Make the most of each moment of study time available to you. The key to success in building a medical vocabulary is memorizing the basic structures in this chapter.

How to Use Programmed Learning Segments

Take time to study the material in each self-instruction frame before starting a review segment. Key term components included in the flash card starter set are identified by letter and number. Locate and use them for additional reinforcement.

Remove the Reveal Card from the back cover of the text. Place the card over the left column of the page to hide the responses to the questions in the learning material in the right column. Slide the card down the page to reveal the answer only after you have written your response in the fill-in space on the right. Use a pencil so that you can quickly erase any inappropriate response and replace it with the correct one. Go over all the correct responses with a highlighter for additional reinforcement.

You can move at your own pace given the time allotted. Between study periods, use the Reveal Card as a bookmark.

TERM COMPONENTS

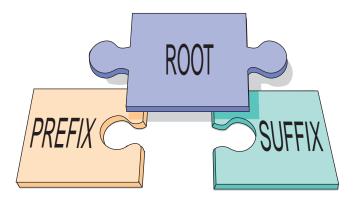
Study the flash cards for the term components listed below in preparation for the programmed review that follows.



Self-Instruction: Term Components

Study the following:

TERM COMPONENT	CATEGORY	MEANING	FLASH CARD ID#
lip	root	fat	
lip/o	combining form	fat	CF-28
-emia	suffix	blood condition	S-10
hyper-	prefix	excessive	P-19
protein	root	protein	



Most medical terms have three basic component parts: the root, the suffix, and the prefix. Each term is formed by combining at least one **root** (the foundation or subject of the word) and a **suffix**

(the word ending that modifies and gives essential meaning to the root). A prefix is placed at the beginning of a term only when needed to further modify the root or roots.



Programmed Review: Three Basic Components

ANSWERS	REVIEW	
THE ROOT AND SUFFIX		
fat foundation or subject blood condition	1.1 In the word lipemia, <i>lip</i> (meaning) is the root and of the term. It is modified and given essential meaning by the suffix <i>-emia</i> , meaning	
root, fat suffix, blood condition fat blood	1.2 Breaking down and defining the key components in a term often defines the term or gives clues to its meaning. In the term lipemia, lip is the that means, and -emia is the Memorizing key medical term components makes it possible to decipher that the term refers to the condition of in the Note that lipemia is synonymous with lipidemia (formed from lip, -oid, and -emia).	
THE PREFIX		
prefix beginning, modify excessive	1.3 The prefix is a term component placed at the beginning of a term when needed to further modify the root or roots. For example, in the term hyperlipemia, <i>hyper</i> - is a placed at the of the term to further the meaning of the term to denote fat in the blood.	
ADDITIONAL ROOTS		
root protein	1.4 Often, a medical term is formed from two or more roots. For example, in the term hyperlipo protein emia, the addition of the protein further defines the word to indicate an excessive amount of fat and in the blood.	

Combining Forms and Combining Vowels

When a medical term has more than one root, the roots are joined together by a vowel, usually an "o." As shown in hyper/lip/o/protein/emia, the "o" is used to link the two roots, and it provides easier pronunciation. This vowel is known as a combining vowel. "O" is the most common combining vowel ("i" is the second most common) and is used so frequently to join root to root or root to suffix that it is routinely attached to the root and presented as a combining form.

Programmed Review: Combining Forms and Combining Vowels

ANSWERS	REVIEW
root, combining	1.5 In <i>lip/o, lip</i> is the and <i>lip/o</i> is the
form, o	(a root with a combining vowel attached). The vowel
combining vowel	is the most common , and
i	is the second most common.

This text uses combining forms rather than roots for easier term analysis. Each is presented with a slash between the root and the combining vowel. Hyphens are placed after prefixes to indicate their placement at the beginning of a medical term, and hyphens are placed before suffixes to indicate their link at the end of a term.

Programmed Review: Overview of Term Components

ANSWERS	REVIEW
	1.6 Most medical terms have three basic component parts:
root, suffix, prefix	the,, and
foundation or subject	1.7 The root is the of the term.
suffix	1.8 The is the word ending that modifies and gives essential meaning to the root.
prefix	1.9 The is the component at the beginning of a term that is used when needed to further modify the root.
two	1.10 Often, a medical term is formed by or more roots.
combining vowel, o	1.11 When a medical term has more than one root, it is joined together by a, usually an
root, vowel	1.12 A combining form is a with a attached.

Note that each component depends upon the other to express the meaning of the term. Few components can stand alone.

CONNECTING TERM COMPONENTS TO CONSTRUCT MEDICAL TERMS

Study the flash cards for the term components listed below in preparation for the instruction and review that follows.



Self-Instruction: Rules for Constructing Terms

Study the following:

COMBINING FORM	MEANING	FLASH CARD ID#
angi/o, vas/o, vascul/o	vessel	CF-5
cardi/o	heart	CF-8
enter/o	small intestine	CF-15
esophag/o	esophagus	CF-17
gastr/o	stomach	CF-20
hem/o, hemat/o	blood	CF-23
hepat/o	liver	CF-24
oste/o	bone	CF-40
ur/o, urin/o	urine	CF-56
SUFFIX	MEANING	FLASH CARD ID#
-al, -eal	pertaining to	S-1
-ectasis	expansion or dilation	S-8
-ectomy	excision (removal)	S-9
-ia	condition of	S-13
-itis	inflammation	S-17
-logy	study of	S-19
-megaly	enlargement	S-22
-stomy	creation of an opening	S-40
-tomy	incision	S-41
PREFIX	MEANING	FLASH CARD ID#
oligo-	few or deficient	P-28
para-	alongside of, abnormal	P-30
peri-	around	P-8

Once you understand the basics of constructing medical terms, the next steps are to memorize common term components and to learn the rules for joining medical term components correctly. Study the following five basic rules, and use them to construct words using the components provided in the Rules for Constructing Terms Self Instruction box above.



Programmed Review: Five Basic Rules for Constructing Terms

ANSWERS	REVIEW
	1.13 A combining vowel is used to join root to root as well
	as root to any suffix beginning with a consonant (any letter
	except a, e, i, o, or u): hepat/o + -megaly is spelled hepatomegaly
enlargement of the liver	and is defined as

ANSWERS	REVIEW
excision (removal) of a vessel	1.14 A combining vowel is <i>not</i> used before a suffix that begins with a vowel: <i>vas/o</i> + <i>-ectomy</i> is spelled vasectomy and is defined as
inflammation of the heart	1.15 If the root ends in a vowel and the suffix begins with the same vowel, drop the final vowel from the root and do <i>not</i> use a combining vowel: <i>cardi/o</i> + <i>-itis</i> is spelled carditis and is defined as
pertaining to the heart and esophagus	1.16 Most often, a combining vowel is inserted between two roots even when the second root begins with a vowel: <i>cardi/o</i> + <i>esophag/o</i> + <i>-eal</i> is spelled cardioesophageal and is defined as
pertaining to alongside of the small intestine	1.17 Occasionally, when a prefix ends in a vowel and the root begins with a vowel, the final vowel is dropped from the prefix: para- + enter/o + -al is spelled parenteral and is defined as

Note that all these rules have exceptions. Follow the basic guidelines set forth in this text, but be prepared to accept the exceptions as you encounter them. Rely upon your medical dictionary for additional guidance.

In the following review, construct words using the rules previously provided and give the meaning for each term.



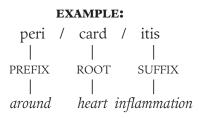
Programmed Review: Putting the Rules into Practice

ANSWERS	REVIEW
angiectasis expansion or dilation of a vessel	and means
gastrotomy incision in the stomach	1.19 gastr/o + -tomy is spelled
hematology study of blood	1.20 <i>hemat/o</i> + <i>-logy</i> is spelled and means

ANSWERS	REVIEW
gastroenterostomy creation of an opening (between) the stomach and small intestine	1.21 gastr/o + enter/o + -stomy is spelled and means
oliguria condition of deficient urine	1.22 <i>oligo-</i> + <i>ur/o</i> + <i>-ia</i> is spelled and means
ostectomy excision (removal) of bone	1.23 <i>oste/o</i> + <i>-ectomy</i> is spelled and means
pericarditis inflammation around the heart	1.24 <i>peri-</i> + <i>cardi/o</i> + - <i>itis</i> is spelled and means

DEFINING MEDICAL TERMS THROUGH WORD STRUCTURE ANALYSIS

You can usually define a term by interpreting the suffix first, then the prefix (if one is present), and then the root or roots.



pericarditis = inflammation around the heart

You sense the basic meaning of the term pericarditis by understanding its components; however, the dictionary clarifies that the term refers to inflammation of the pericardium, the sac that encloses the heart.

Beginning students often have difficulty differentiating between prefixes and roots (or combining forms) because the root appears first in a medical term when a prefix is not used. It is important to memorize the most common prefixes (those in your starter flash card set) so that you can tell the difference. Also, keep in mind that a prefix is used only as needed to further modify the root or roots.

THE FORMATION OF MEDICAL TERMS

Study the flash cards for the term components listed next to prepare for the review that follows.



Self-Instruction: Patterns of Term Formation

Study the following:

COMBINING FORM	MEANING	FLASH CARD ID#
cardi/o	heart	CF-8
vascul/o	vessel	CF-5
SUFFIX	MEANING	FLASH CARD ID#
-ac, -al, -ar	pertaining to	S-1
-dynia	pain	S-2
-ium	structure or tissue	S-18
-logy	study of	S-19
-rrhaphy	suture	S-34
-rrhexis	rupture	S-36
PREFIX	MEANING	FLASH CARD ID#
endo-	within	P-15
epi-	upon	P-16
sub-	below or under	P-36

All medical terms are built from the root. Prefixes and suffixes are attached to the root to modify its meaning. Two or more roots are often linked together before being modified.

The following examples show the common patterns of medical term formation using the root *cardi* (heart) as a base. Using the term components listed earlier, define the term as you examine each pattern. Also, make a note of the rule used for forming each term.



Programmed Review: Patterns of Term Formation

ANSWERS	REVIEW
	1.25 Root/Suffix
pertaining to the heart	cardi/ac means
	1.26 Prefix/Root/Suffix
structure or tissue	epi/card/ium means
upon the heart	
	1.27 Prefix/Prefix/Root/Suffix
pertaining to below	sub/endo/cardi/al means
or under and within	
the heart	
	1.28 Root/Combining Vowel/Root/Suffix
pertaining to the	cardi/o/vascul/ar means
heart and vessels	<u> </u>

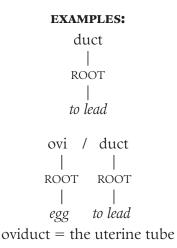
ANSWERS	REVIEW
study of the heart	1.29 Root/Combining Vowel/Suffix cardi/o/logy means
pain in the heart	1.30 Root/Combining Vowel/Suffix (Symptomatic) [page 18] cardi/o/dynia means
rupture of the heart	1.31 Root/Combining Vowel/Suffix (Diagnostic) [page 19] cardi/o/rrhexis means
suture of the heart	1.32 Root/Combining Vowel/Suffix (Operative) [page 19] cardi/o/rrhaphy means

Acceptable Term Formations

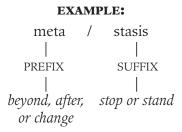
As you learn medical terms, you can have fun experimenting with creating words, such as glyco (sweet) + cardio (heart) = sweetheart! However, in the real medical world, a term must be accepted by the medical community for it to be considered a legitimate word. Often, there seems to be no reason why a particular word form became acceptable. If in doubt, always check your medical dictionary for the correct spelling, formation, or precise meaning of a term.

A FEW EXCEPTIONS

Most medical terms are formed by the combination of a root or roots that are modified by suffixes and prefixes, as shown earlier in this section. Occasionally, terms are formed by a root alone or by a combination of roots.



Sometimes, a term is formed by the combination of a prefix and suffix.



metastasis = the spread of a disease, such as cancer, from one location to another

SPELLING MEDICAL TERMS

Correct spelling of medical terms is crucial for communication among health care professionals. Careless spelling causes misunderstandings that can have serious consequences. The following list shows some of the pitfalls to avoid.

1. Some words sound the same but are spelled differently and have different meanings. Context is the clue to spelling. For example:

ileum (part of the intestine) ilium (part of the hip bone) cytology (study of cells) sitology (study of food)

2. Other words sound similar but are spelled differently and have different meanings. For example:

adduction (to draw toward) abduction (to draw away from) hepatoma (liver tumor) hematoma (blood tumor) aphasia (inability to speak) aphagia (inability to swallow)

3. When letters are silent in a term, they risk being omitted when spelling the word. For example: "pt" has a "t" sound if found at the beginning of a term (e.g., pterygium), but both the "p" and "t" are pronounced when found within a term (e.g., nephroptosis [nĕf-rop-tō'sis])

```
"ph" has an "f" sound (e.g., diaphragm)
"ps" has an "s" sound (e.g., psychology)
```

4. Some words have more than one accepted spelling. For example:

orthopedic orthopaedic leukocyte leucocyte

5. Some combining forms have the same meaning but different origins that compete for usage. For example, there are three combining forms that mean uterus:

hyster/o (Greek) metr/o (Greek) uter/o (Latin)

RULES OF PRONUNCIATION

When you are beginning to learn how to pronounce medical terms, the task can seem insurmountable. Saying a term out loud for the first time can be a tense moment! The best way to make sure you get it right is through preparation: study the basic rules of pronunciation found in this chapter; repeat the words after hearing them pronounced on the CD-ROM accompanying this text or after your instructor has said them; and to try to keep the company of others who use medical language. You'll soon discover that there is nothing quite like the validation you feel when you correctly say something "medical" and no one flinches! Your confidence will build with every word

Use these helpful shortcuts to master the pronunciation of medical terminology:

SHORTCUTS TO PRONUNCIATION	
CONSONANT	EXAMPLE
c (before a, o, u) = k	cavity, colon, cure
c (before e, i) = s	cephalic, cirrhosis

CONSONANT	EXAMPLE
ch = k	cholesterol
g (before a, o, u) $=$ g	gallstone, gonad, gurney
g (before e, i) = j	generic, giant
ph = f	phase
pn = n	pneumonia
ps = s	psychology
pt = t	ptosis, pterygium
rh, rrh = r	rhythm, hemorrhoid
x (as first letter in a word) = z	xerosis

Phonetic spelling for the pronunciation of most medical terms in this text is provided in parentheses below the term. The phonetic system used here is basic and has only a few standard rules. The macron and breve are the two diacritical marks used. The macron (-) is placed over vowels that have a long sound:

ā in day

ē in bee

ī in pie

ō in no

ū in unit

The breve () is placed over vowels that have a short sound:

ă in alone

ĕ in ever

ĭ in pit

ŏ in ton

ŭ in sun

Vowels that are not accented have a flat sound:

a in mat

e in bed

i in hip

o in got

u in put

The primary accent (') is placed after the syllable that is stressed when saying the word. Monosyllables do not have a stress mark. Other syllables are separated by hyphens.

SINGULAR AND PLURAL FORMS

Plurals are usually formed by adding "s" or "es" to the end of a singular form. The following are common exceptions for forming plurals of Latin and Greek derivatives. Study the exceptions to prepare for the review that follows.



Self-Instruction: Singular and Plural Forms

SINGULAR ENDING	EXAMPLE	PLURAL ENDING	EXAMPLE
~a	vertebra <i>vĕr' tĕ-bră</i>	~ae	vertebrae vĕr' tĕ-brā
~is	diagnosis dī-ag-nō'sis	~es	diagnoses dī-ag-nō' sēz
-ma	condyloma kon-di-lō' mă	~mata	condylomata kon' di-lō-mah' tă
~on	phenomenon fĕ-nom'ĕ-non	~a	phenomena fĕ-nom'ĕ-nă
~um	bacterium bak-tēr'ē-уйт	~a	bacteria <i>bak-tēr'ē-</i> ǎ
~us*	fungus f ันทg'gนัร	-i	fungi <i>fŭn'jī</i>
-ax	thorax thō'raks	~aces	thoraces thō-rā' sēz
-ex	apex ā' peks	-ices	apices <i>ap'i-sēs</i>
~ix	appendix <i>ă-pen' diks</i>	-ices	appendices <i>ă-pen' di-sēz</i>
~y	myopathy <i>mī-op'ă-thē</i>	~ies	myopathies mī-op'ǎ-thēz

^{*}The words virus and sinus follow the usual rule of adding "s" or "es" to form the plural (viruses and sinuses) instead of using the Latin plural ending -i.

Programmed Review: Singular and Plural Forms

ANSWERS	REVIEW
t	1.33 The <i>pt</i> in <i>pterygium</i> has a/an sound.
ovaries, ova	1.34 An ovum is an egg produced by an ovary. There are two in the female that produce eggs or
k	1.35 The <i>ch</i> in <i>chronic</i> has a/an sound.
metastases	1.36 The spread of cancer to a distant organ is called metastasis. The spread of cancer to more than one organ is
s	1.37 The <i>c</i> in <i>cirrhosis</i> has a/an sound.
verrucae	1.38 A verruca is a wart. The term for several warts is

ANSWERS	REVIEW
Z	1.39 The <i>x</i> in <i>xerosis</i> has a/an sound.
	1.40 Condylomata are genital warts. One genital wart is a
condyloma	·
j	1.41 The <i>g</i> in <i>genital</i> has a/an sound.
index	1.42 Indices is a plural form of
thrombi	1.43 A thrombus is a clot. Several clots are termed
n	1.44 The pn in pneumatic has a/an sound.

BUILDING A VOCABULARY

The key to building a medical vocabulary is to know and understand the basic term components. To start you on your way, study and memorize the following lists of common prefixes, suffixes, and combining forms used in medical language. Each of these term components is included on a flash card in the starter set. Organize the flash cards as suggested in each section. Draw lines to separate the components in each of the example terms found on the cards, and write definitions in the margins to prepare for review exercises.

Refer to Appendix A for a summary list of prefixes, suffixes, and combining forms.

Common Prefixe

Prefixes are term components found at the beginning of a term when needed to further modify the root or roots. A list of commonly used prefixes organized into categories follows. Each is included on a flash card in the starter set. Organize the cards into the categories listed here. Draw lines to separate the components in each of the example terms shown on the cards, and write definitions in the margins in preparation for the review exercises.



Self-Instruction: Common Prefixe

Study the following:

PREFIX	MEANING	FLASH CARD ID#
NEGATION		
a~, an~	without	P-1
anti-, contra-	against or opposed to	P-5
de-	from, down, or not	P-10
POSITION/DIRECTION		
ab~	away from	P-2
ad-	to, toward, or near	P-3

PREFIX	MEANING	FLASH CARD ID#
circum-, peri-	around	P-8
dia-, trans-	across or through	P-11
e-, ec-, ex-	out or away	P-13
ecto-, exo-, extra-	outside	P-14
en-, endo-, intra-	within	P-15
epi-	upon	P-16
inter-	between	P-21
meso-	middle	P-23
meta-	beyond, after, or change	P-24
para-	alongside of or abnormal	P-30
retro-	backward or behind	P-35
sub-, infra-	below or under	P-36
QUANTITY OF MEASURE	MENT	
bi-	two or both	P-6
hemi-, semi-	half	P-18
hyper-	above or excessive	P-19
hypo-	below or deficient	P-20
macro-	large or long	P-22
micro-	small	P-25
mono-, uni-	one	P-26
oligo-	few or deficient	P-28
pan-	all	P-29
poly-, multi-	many	P-31
quadri-	four	P-33
super-, supra-	above or excessive	P-37
tri-	three	P-39
ultra-	beyond or excessive	P-40
TIME		
ante-, pre-, pro-	before	P-4
brady-	slow	P-7
tachy-	fast	P-38
post-	after or behind	P-32
re-	again or back	P-34

PREFIX	MEANING	FLASH CARD ID#
GENERAL PREFIXES		
con-, syn-, sym-	together or with	P-9
dys-	painful, difficult, or faulty	P-12
eu-	good or normal	P-17
neo-	new	P-27

Study the flash cards for the prefixes listed above in preparation for the following review.

Programmed Review: Common Prefixe

ANSWERS	REVIEW
away to, toward, or near around across or through out or away one, bi	1.45 Several prefixes modify position or direction when used in a term. Abduction is used to describe movement from the body, and adduction describes movement the body. Circumduction is movement that is A diagonal is an angle that moves Inversion refers to turning in, and eversion means to turn Unilateral refers to side, whereaslateral means both sides.
below or under upon across or through within, intra outside between inter, out away, below or under infra	1.46 Subcutaneous pertains to the skin. Epidermal refers to something the skin, whereas transdermal pertains to the skin. Intradermal pertains to the skin. That which is within a cell is cellular. Extracellular pertains to a cell. Inter-, a prefix meaning, is used in the term describing that which is between cells: cellular. Eccentric is situated or from center. Infra-, a prefix meaning, is used to indicate a position below the part to which it is joined. For example, umbilical refers to a position below or under the umbilicus (navel).
within endo, middle meso outside, ecto	1.47 Layers of embryonic tissue are named for their position. Endo-, meaning, is used to describe the innermost layer, orderm. Meso-, meaning, is used to name the middle layer, orderm. Ecto-, meaning, is used to identify the outer layer, orderm.

ANSWERS	REVIEW	
exo endo within	1.48 Glands that secrete within the body are the endocrine glands, and those that secrete outside are the crine glands. An instrument to examine within the body is an scope. When something is encapsulated, it is held	
deficient excessive hypo hyper below above above, excessive above excessive beyond ultra	above or	
large small macro, micro	1.50 <i>Macro-</i> refers to something or long, and <i>micro-</i> refers to something A large cell is called a cyte.	
mono-, one bi-, tri- quadri-, many one many three four	1.51 Uni- and are prefixes meaning The prefix for two is, three is, and four is Multi- and poly- mean Mononeuropathy describes the disease of nerve, whereas polyneuropathy involves nerves. A triangle has sides. Quadriplegia is a condition of paralysis of all limbs.	
all Pan	1.52 <i>Pan-</i> is a prefix meaning A panacea is a cure-allsinusitis refers to an inflammation of all of the sinuses.	
semi- one-half	1.53 The two prefixes meaning one-half are <i>hemi-</i> and Semi lunar pertains to a half-moon shape. Hemi cephalic pertains to of the head.	

ANSWERS	REVIEW
without an a, painful, difficult, or faulty dys a	1.54 <i>A-</i> and <i>an-</i> are prefixes meaning <i>An-</i> is used before a vowel. For example, aerobic pertains to air, andaerobic pertains to without air. A patient without the ability to speak has a condition calledphasia. <i>Dys-</i> is a prefix meaning Dys phasia is a condition of difficult speech. A condition of difficulty swallowing is termedphagia. The patient without the ability to swallow hasphagia.
contra-, against or opposed to anti	1.55 Two prefixes meaning against or opposed to are <i>anti-</i> and A contra ceptive is conception. Aninflammatory drug acts against or opposed to inflammation by reducing it.
from, down, or not again before backward or behind	1.56 De activated refers to something that is active. When something is re activated, it is made active Pro active refers to an action made Retro position refers to a structure that is
fast slow, tachy brady slow fast	1.57 Tachy- is a prefix meaning, and brady- means A condition of fast heart is cardia. A condition of slow heart is cardia. Bradypnea refers to breathing, whereas tachypnea refers to breathing.
before pre around, after Neo	1.58 Natal pertains to birth. Antenatal is the time birth, also known as the natal period. Perinatal is the time birth, and postnatal is the time birth natal pertains to newborn.
good or normal painful, difficult, or faulty	1.59 <i>Toc/o</i> is a combining form meaning labor. Eu tocia is a condition of labor, and dys tocia is a condition of labor.

ANSWERS	REVIEW	
together	1.60 <i>Con-, syn-,</i> and <i>sym-</i> are prefixes meaning or	
with	A con genital disorder is one that an infant is born	
with	<i>Dactyl/o</i> is a combining form meaning finger or toe.	
	Syndactylism is a condition of fingers or toes that are fused	
together	<i>Syn-</i> appears as <i>sym-</i> before b, p, ph, or m.	
	For example, the term describing the condition in which different	
sym	species are able to live together isbiosis.	

Common Suffixe

Suffixes are endings that modify the root. These endings give the root essential meaning by forming a noun, verb, or adjective. The two basic types of suffixes are simple and compound. Simple suffixes form basic terms. For example, the simple suffix -ic (pertaining to) combined with the root gastr (stomach) forms the term gastric (pertaining to the stomach). Compound suffixes are formed by a combination of basic term components. For example, the root tom (to cut) combined with the simple suffix -y (a process of) forms the compound suffix -tomy (incision); the compound suffix *-ectomy* (excision or removal) is formed by a combination of the prefix *ec-* (out) with the root *tom* (to cut) and the simple suffix -y (a process of).

Compound suffixes are added to roots to provide a specific meaning. For example, combining the root hyster (uterus) with -ectomy forms hysterectomy (excision of the uterus). Noting the differences between simple and compound suffixes will help you to analyze medical terms.

Suffixes in this text are divided into four categories:

- 1. Symptomatic suffixes, which describe the evidence of illness
- 2. Diagnostic suffixes, which provide the name of a medical condition
- 3. Surgical (operative) suffixes, which describe a surgical treatment
- 4. General suffixes, which have general application

A listing of commonly used suffixes follows. Each suffix is included on a flash card in the starter set. Organize the cards into the four categories of suffixes. Draw lines to separate the components in each of the example terms found on the cards, and write definitions in the margins to prepare for the review exercises.



Self-Instruction: Common Suffixe

Study the following:

SUFFIX	MEANING	FLASH CARD ID#
SYMPTOMATIC SUFFIXES (Word Endings That Describe Evidence of Illness)		
-algia, -dynia	pain	S-2
-genesis	origin or production	S-11
-lysis	breaking down or dissolution	S-20

SUFFIX	MEANING	FLASH CARD ID#
-megaly	enlargement	S-22
-oid	resembling	S-24
-penia	abnormal reduction	S-27
-rrhea	discharge	S-35
-spasm	involuntary contraction	S-38
DIAGNOSTIC SUFFIXES (Word Endings That Desc	ribe a Condition or Disease)	
-cele	pouching or hernia	S-4
-ectasis	expansion or dilation	S-8
-emia	blood condition	S-10
-iasis	formation or presence of	S-15
-itis	inflammation	S-17
-malacia	softening	S-21
-oma	tumor	S-25
-osis	condition or increase	S-26
-phil, -philia	attraction for	S-29
-ptosis	falling or downward displacement	S-32
-rrhage, -rrhagia	to burst forth (usually blood)	S-33
-rrhexis	rupture	S-36
SURGICAL (OPERATIVE) SUFFIXES (Word Endings That Describe a Surgical [Operative] Treatment)		
-centesis	puncture for aspiration	S-5
-desis	binding	S-6
-ectomy	excision (removal)	S-9
-pexy	suspension or fixation	S-28
-plasty	surgical repair or reconstruction	S-30
-rrhaphy	suture	S-34
-tomy	incision	S-41
-stomy	creation of an opening	S-40
GENERAL SUFFIXES (Simple or Compound Suffixes That Have General Application)		
Noun Endings (suffixes tha	t form a noun when combined with a	root)
-ation	process	S-3
~e	general indicator that a word is a person, place, or thing	S-7

SUFFIX	MEANING	FLASH CARD ID#
-ia, -ism	condition of	S-13
- y	condition or process of	S-42
-ium	structure or tissue	S-18
Adjective Endings (suffixes with a root)	that form an adjective when combine	ed
-ac, -al, -ar, -ary, -eal, -ic, -ous, -tic	pertaining to	S-1
Diminutive Endings (suffixes meaning small)		
-icle, -ole, -ula, -ule	small	S-16
Other General Suffixes		
-gram	record	S-12
-graph	instrument for recording	S-12
-graphy	process of recording	S-12
-iatrics, -iatry	treatment	S-14
-logy	study	S-19
-logist	one who specializes in the study or treatment of	S-19
-ist	one who specializes in	S-19
-meter	instrument for measuring	S-23
-metry	process of measuring	S-23
-poiesis	formation	S-31
-scope	instrument for examination	S-37
-scopy	process of examination	S-37
-stasis	stop or stand	S-39

Don't be rolled over by the



We have the Greeks to thank for the suffixes with double rr's. Take a careful look at each so that you will spell them correctly in a term!

Suffix	Meaning	Example
-rrhea	discharge	pyorrhea (a discharge of pus)
-rrhage or -rrhagia	to burst forth (usually blood)	hemorrhage (a burst forth of blood)
		menorrhagia (a burst forth of blood during menstruation)
-rrhexis	rupture	angiorrhexis (a rupture of a vessel)
-rrhaphy	suture	nephrorrhaphy (a suture of the kidney)

Each component also has an *h*, and *-rrhaphy* has two!

Study the flash cards for the suffixes listed on the previous pages in preparation for the following review.



Programmed Review: Common Suffixe

ANSWERS	REVIEW	
stomach	1.61 <i>Gastr/o</i> is a combining form meaning	
prefix, upon	In epigastrium, <i>epi</i> - is the meaning, and	
-ium, suffix	is the, a noun ending meaning	
structure, tissue	or The noun endings -ia and	
	-ism, as seen in the terms pneumonia and hypothyroidism, refer	
condition of	to a The -y ending in atrophy indicates a	
process of	condition or The suffix in extravasation denotes	
process, noun	a marker.	
-ic	1.62 In epigastric, use of the suffix forms an adjective that	
pertaining to	means the stomach—specifically referring to	
upon, epigastrium	the tissue region the stomach known as the	
-eal	In gastroesophageal, is the adjective ending that modifies	
pertaining to	the term to mean the stomach and	
esophagus	Several other suffixes form adjectives, as noted in the	
	terms cardiac, pedal, glandular, pulmonary, esophageal, hypnotic,	
pertaining to	and fibr ous , and also mean	
ending	1.63 A symptomatic suffix is a term used to describe	
pain	evidence of illness. The suffixes -algia or -dynia (meaning),	
enlargement	-megaly (meaning), -rrhea (meaning	
discharge, involuntary), and -spasm (meaning	
contraction) are examples of suffixes used to form	
symptomatic, illness	terms that describe evidence of	

ANSWERS	REVIEW
gastralgia or gastrodynia epigastralgia gastrospasm rrhea gastromegaly	1.64 The symptomatic term that describes stomach pain is Pain located in the tissue upon the stomach is termed Involuntary contraction of the stomach is called, and the discharge of gastric juice from the stomach is termed gastro Enlargement of the stomach is termed
pain examination stomach within gastroscope	1.65 Physical examination and test procedures are key to identifying the cause of symptoms in order to make a diagnosis. A diagnosis is the name of a condition or disease. In evaluating the cause of a symptom such as gastrodynia, or in the stomach, a gastroscopy or of the may be performed. The specific endoscope (instrument to examine) used in gastroscopy is called a
endings diagnosis gastritis iasis gastromalacia pouching, hernia gastrocele blood, burst forth gastrorrhagia stasis	a condition or name of a disease, called a If, on gastroscopic examination, the physician notes an inflammation of the stomach, a diagnosis of is made. The presence of a stone in the stomach is termed gastrolith A finding of softening of the stomach wall is referred to as The suffix -cele, meaning or, is used in the term describing a pouching or hernia of the stomach: Hemorrhage, a term referring to bleeding, was formed by the link of hem/o, a combining form meaning, with -rrhage, a suffix meaning to, usually in reference to blood. Using the suffix -rrhagia, the condition of bursting forth of blood from the stomach is called The suffix meaning stop or stand is used in the term describing efforts to stop hemorrhaging blood: hemo
stomach suffix, study of	1.67 Gastroenterology, a term formed by a link of <i>gastr/o</i> (meaning), <i>enter/o</i> (meaning small intestine), and <i>-logy</i> (a), is the name of the medical specialty involved with the study of gastrointestinal conditions. Using the suffix referring to one who specializes in the

ANSWERS	REVIEW
gastroenterologist	study or treatment of, the physician who specializes in the treatment of the stomach and intestines is called a
condition, increase stenosis gastrostenosis	1.68 Many symptomatic and diagnostic terms use the suffix <i>-osis</i> to indicate a or For example, when combined with <i>sten/o</i> , a combining form meaning narrow, the term for a condition or increase of narrowing is A narrowed condition of the stomach is therefore called
endings operative -tomy, gastrotomy	1.69 Once a diagnosis is made, treatment follows. Some treatments require surgery. Operative suffixes are term that describe a surgical or treatment. The first step in a surgical procedure is to make an incision, the suffix for which is An incision in the stomach is called a
gastrectomy downward	Given a diagnosis of stomach tumor, a surgical remedy might involve a partial or complete removal of the stomach, called a Gastroptosis, defined as a falling or
displacement, stomach pexy gastroplasty	of the, may necessitate a surgical suspension or fixation, called a gastro The operative term describing a surgical repair of the stomach is
gastrostomy gastrorrhaphy -centesis	In some cases, the creation of an opening is required, such as to bypass a diseased part. The creation of a new opening in the stomach is called Perforation of the stomach requires suturing, the operative term for which is When fluid builds up within the abdominal cavity as a result of illness or injury, a puncture for aspiration is required. The suffix meaning puncture for aspiration is The surgical
-desis	suffix specifically referring to binding of tissue is
-icle -iole, -ula, -ule	1.70 Other general suffixes are commonly seen in health records. Those referring to diminutives (something small) are

ANSWERS	REVIEW
	1.71 You'll find several general suffixes describing diagnostic
record	testing. For example, -gram is a suffix meaning An
	electrocardiogram (ECG) is a record of the electrical conduction
	of the heart. The instrument for recording an ECG is called an
graph	electrocardio machine. This process of recording is
electrocardiography	referred to as The suffix -metry is a suffix
measuring	referring to the process of A thermometer is
instrument	an for measuring temperature.

Common Combining Forms

The following table shows selected combining forms (roots with vowels attached) to give you a start toward building medical terms. Each is included on a flash card in the starter set. Organize the cards into categories such as the ones in the following list. Review the cards by drawing lines to separate the components in each example term, and write definitions in the margins in preparation for the review exercises. Additional combining forms are introduced at the beginning of Chapters 3 through 15 on the body systems, and Appendix A contains a summary list of combining forms. Study the entire starter set of flash cards in preparation for the next review.



Self-Instruction: Common Combining Forms

Study the following:

COMBINING FORM	MEANING	FLASH CARD ID#
COLORS		
cyan/o	blue	CF-12
erythr/o	red	CF-16
leuk/o	white	CF-27
melan/o	black	CF-30
SUBSTANCES		
aer/o	air, gas	CF-4
hem/o, hemat/o	blood	CF-23
hydr/o	water	CF-26
lip/o	fat	CF-28
py/o	pus	CF-49
ur/o, urin/o	urine	CF-56

COMBINING FORM	MEANING	FLASH CARD ID#
ORGANS/STRUCTURES		
abdomin/o, lapar/o	abdomen	CF-1
acr/o	extremity or topmost	CF-2
aden/o	gland	CF-3
angi/o, vas/o, vascul/o	vessel	CF-5
arthr/o	joint	CF-6
cardi/o	heart	CF-8
cephal/o	head	CF-9
col/o, colon/o	colon	CF-10
cyt/o	cell	CF-13
derm/o, dermat/o, cutane/o	skin	CF-14
enter/o	small intestine	CF-15
esophag/o	esophagus	CF-17
gastr/o	stomach	CF-20
hepat/o	liver	CF-24
hist/o	tissue	CF-25
my/o, muscul/o	muscle	CF-32
nas/o, rhin/o	nose	CF-33
nephr/o, ren/o	kidney	CF-35
neur/o	nerve	CF-36
or/o	mouth	CF-38
oste/o	bone	CF-40
pneum/o, pneumon/o	air or lung	CF-47
GENERAL COMBINING FO	RMS	
carcin/o	cancer	CF-7
crin/o	to secrete	CF-11
esthesi/o	sensation	CF-18
fibr/o	fiber	CF-19
gen/o	origin or production	CF-21
gynec/o	woman	CF-22
lith/o	stone	CF-29
morph/o	form	CF-31
necr/o	death	CF-34

COMBINING FORM	MEANING	FLASH CARD ID#
onc/o	tumor or mass	CF-37
orth/o	straight, normal, or correct	CF-39
path/o	disease	CF-41
ped/o	child or foot	CF-42
phag/o	eat or swallow	CF-43
phas/o	speech	CF-44
phob/o	exaggerated fear or sensitivity	CF-45
plas/o	formation	CF-46
psych/o	mind	CF-48
scler/o	hard	CF-50
son/o	sound	CF-51
sten/o	narrow	CF-52
therm/o	heat	CF-53
tox/o, toxic/o	poison	CF-54
troph/o	nourishment or development	CF-55

Programmed Review: Common Combining Forms

ANSWERS	REVIEW
kidney	1.72 <i>Nephr</i> is a Greek root meaning Combined
combining, form	with an "o", it becomes nephr/o, a
	Nephr/o cannot stand alone as a term. At the least, it needs a
suffix	to give it essential meaning. In the term nephrology,
	the addition of the suffix -logy forms a term with a specific meaning:
study, kidney	of the
	1.73 In nephrolithiasis, the link of <i>nephr/o</i> to <i>lith</i> , a root meaning
stone, -iasis	, and the suffix forms the term referring to the
presence or formation	
of kidney stones, o	The combining vowel for <i>lith</i> is Notice that
	the vowel was not used when linked to -iasis, because the
suffix	began with a vowel. Nephrolithiasis is a renal disease.
ren/o	Renal is a term formed using, the Latin combining form
	meaning kidney.

ANSWERS	REVIEW
combining form	1.74 Abdomin/o is a meaning
abdomen	, the central part of the body trunk. Note that the
	spelling of abdomin/o is different from the anatomic part it represents.
lapar/o	Another combining form meaning abdomen is
	A laparoscope is an instrument used to examine the
abdomen	·
water	1.75 <i>Hydr/o</i> is a combining form meaning A person
	with hydrocephaly has a condition of water (fluid) within the
head	
acro	1.76 An enlarged extremity is calledmegaly. <i>Acr/o</i> also
topmost, acro	means A person withphobia has a fear of
	high places.
	1.77 The suffix meaning origin or production is <i>-genesis</i> . The
gen/o	combining form meaning origin or production is The
origin or production	suffix -genic pertains to Carcinogenic pertains
cancer	to the origin or production of
	1.78 Several combining forms are listed in the starter set related
melan/o, leuk/o	to color: black is, white is, red is
erythr/o, cyan/o	, and blue is Melanoma, referring to a
black	tumor, is a common cutaneous cancer, or
skin, white	cancer. A leukocyte is a cell. Erythroderma
red	refers to skin. When the skin turns blue from lack of
cyan	oxygen, it is termedosis.

LEVELS OF ORGANIZATION IN THE BODY (Fig. 1-1)

Study the entire starter set of flash cards to prepare for the review that follows.



Programmed Review: Cells/Tissues/Organs/Systems

ANSWERS	REVIEW
	1.79 The term cell, meaning small room, was used to describe the
	structures first observed in 1665 by Robert Hooke as he examined
	cork using a microscope, an instrument to examine something
small	He noted that the small cells were part of a larger web of

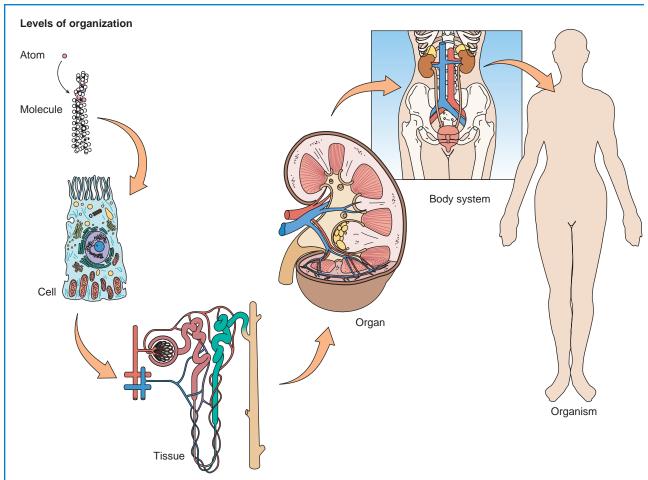


FIGURE 1-1 Levels of organization in the body.

ANSWERS	REVIEW
cell	woven tissue. Using cyt/o, a combining form meaning, the
	study of cells that comprise the human body became known as
cyto, histology	logy and the study of tissue as <i>Morph/o,</i>
form	a combining form meaning, is used to name the study of
morphology	the form and shape of cells and tissue:
	1.80 Body cells combine to form tissues, and combinations of
	tissues compose the organs necessary for body functions. Organs
larger	act together as part of the body systems. For example,
organs	the kidneys are that function to filter blood as part of
urine	the urinary system (<i>urin/o</i> means and -ary means
pertaining to).
	1.81 The Greek combining form for kidney is <i>nephr/o</i> , and the Latin
ren/o	is The medical specialty concerned with the study and
urology	treatment of the urinary tract is called The

ANSWERS	REVIEW
nephro	physician who particularly specializes in the study and treatment of the kidneys is known as alogist.
patho pathologist	1.82 Examination of body cells and tissues is part of the medical specialty concerned with the study of disease, known aslogy. The physician who is a specialist in the study of disease is called a
formation faulty new -oma carcinoma oncology	1.83 Plas/o is a combining form meaning
dermat/o skin study dermatologist	1.84 The largest organ of the body is the skin. <i>Cutane/o</i> is the Latin combining form, and <i>derm/o</i> and are the Greek combining forms, that mean Dermatology is the specialty involved with the and treatment of skin diseases. The specialist is called a
Oste/o joint muscle correct foot	1.85 The musculoskeletal system provides support and gives shape to the body. Bones, which form the skeleton, are covered with muscle to supply the forces that make movement possible.
heart, vessels blood hematology cell	1.86 The cardiovascular system consists of the and that transport blood throughout the body. Blood provides transport for oxygen, nutrients, wastes, etc. <i>Hem/o</i> and <i>hemat/o</i> are combining forms meaning The study of blood is called It includes analysis of blood and its cellular components. <i>Cyt/o</i> means Cells of the

ANSWERS	REVIEW
red leukocytes blood, suffix poison py/o, formation	blood include erythrocytes, or cells, and, or white cells. Hemopoiesis is a term referring to the formation of, and -emia is the that means blood. Toxemia is a condition of blood Leukocytes are blood cells that fight infection. They are present in pus, the fluid produced by inflammation of tissue. The combining form for pus is Pyopoiesis describes the
pus	of
nose nas/o	1.87 <i>Pneum/o</i> , meaning, is the key combining form of the respiratory system, the body system responsible for the exchange of gases (oxygen and carbon dioxide) within the body. The nose is the first structure to receive oxygen. <i>Rhin/o</i> is the Greek combining form meaning The Latin combining form with the same meaning is
Neur/o	1.88 The nervous system is a complicated network of nerves and fibers that control all functions of the body is the combining form for nerve.
within, to secrete	1.89 The ductless glands of the endocrine system affect the function of organs by the secreting hormones. <i>Endo</i> means, and <i>crin/o</i> means
mouth esophagus, stomach small, large liver	1.90 The gastrointestinal system provides for digestion and elimination. Combining forms related to key structures of the tubular digestive tract are <i>or/o</i> (meaning
logist gynecology	1.91 The male and female reproductive systems produce the sex cells and maintain the organs necessary for production of human offspring. The physician who specializes in the treatment of the male and female urinary system, as well as the male reproductive system, is called a uro Treatment of the female reproductive system involves two medical specialties: obstetrics and (study of woman).

PRACTICE EXERCISES

Circle the correct meaning for the following term components:

1.	inter-				
	a. difficult	b. between	c. within	d. out, away	e. behind
2.	ultra-				
	a. across	b. excessive	c. against	d. around	e. without
3.	anti-				
	a. beside	b. outside	c. against	d. around	e. away from
4.	a-				
	a. double	b. both	c. two	d. without	e. against
5.	bi-				
	a. without	b. upon	c. excessive	d. two	e. back, again
6.	pre-				
	a. against	b. out	c. toward	d. before	e. after
7.	poly-				
	a. many	b. few	c. above	d. before	e. after
8.	neo-				
	a. birth	b. death	c. origin	d. new	e. disease
9.	peri-				
	a. many	b. all	c. alongside of	d. attraction for	e. around
10.	hyper-				
	a. below	b. after	c. beyond	d. excessive	e. deficient
11.	-plasty				
	a. surgical repair	b. cancer	c. tumor	d. excision	e. incision
12.	-megaly				
4.0	a. development	b. tumor	c. fixation	d. enlargement	e. softening
13.	-itis	1 11.1		1.0	
1.1	a. excision	b. condition	c. abnormal reduction	d. formation	e. inflammation
14.	-rrhagia	1 .	,		
1.5	a. discharge	b. suture	c. rupture	d. burst forth	e. repair
15.	-penia	1. C		J J	
17	a. discharge	b. fixation	c. rupture	d. reduction	e. suspension
16.	necr/o	la dontie	a lala ala	d +	a lawa
17	a. fear	b. death	c. black	d. tumor	e. large
1/.	toxic/o	h noise	2 4442	d arrell	م امام ماء
	a. development	b. poison	c. pus	d. swallow	e. black

18.	acr/o				
	a. gland	b. blue	c. air	d. extremity	e. red
19.	angi/o				
	a. artery	b. heart	c. vessel	d. red	e. gland
20.	cyt/o				
	a. color	b. sac	c. blue	d. colon	e. cell
21.	melan/o				
	a. death	b. disease	c. black	d. dissolution	e. large

^{*}After verifying that you have circled the correct answers, go back over questions 1-21 and write the correct term component for each of the meanings listed.

Circle the correct term component for the following meanings:

22.	kidney				
	a. enter/o	b. gastr/o	c. ren/o	d. hepat/o	e. necr/o
23.	large				
	a. poly-	bmalacia	coma	d. hyper-	e. macro-
24.	record				
	ameter	bmetry	cgram	dgraph	egraphy
25.	surgical fixation				
	aptosis	bplasia	cpenia	dpexy	eplasty
26.	condition or increase				
	aitis	biasis	cosis	dium	eous
27.	excision				
	atomy	bstomy	cectomy	dcentesis	ecele

^{*}After verifying that you have circled the correct answers, go back over questions 22-27 and write the meaning for each term component listed.

Circle the correct plural for the following words:

28.	vertebra				
	a. vertebray	b. vertebras	c. vertebrae	d. vertebrus	e. vertebraes
29.	bulla				
	a. bulli	b. bullia	c. bullae	d. bullas	e. bullata
30.	speculum				
	a. speculata	b. speculumes	c. specula	d. speculae	e. speculuma
31.	fungus				
	a. fungi	b. fungae	c. funges	d. funguses	e. fungea
32.	stoma				
	a. stomata	b. stomatae	c. stomes	d. stomatus	e. stomatum

				CHAI IER	• Drisic ILIII	VI COIVI	II OIVEIVIS
33.	macula						
	a. maculus	b. maculas	c. maculi	d. maculae	e. maculi	ies	
34.	radius						
	a. radii	b. radiusos	c. radiuses	d. radia	e. radiis		
35.	diagnosis						
	a. diagnosa	b. diagnoses	c. diagnosses	d. diagnosi	e. diagno	sae	
Circ	le the operative t	erm in each of	the following	:			
36.	a. nephroptosis	b. hemolysis	c. angiecta	sis	d. colostom	ıy	e. necrosis
37.	a. vasorrhaphy	b. hematoma	c. gastroce	ele	d. endoscop	e e	e. cardiorrhexis
38.	a. morphologic	b. adenolysis	c. abdomir	nocentesis	d. osteomal	acia	e. polyrrhea
	ter verifying that y	ou have circled	d the correct a	nswers, go ba	ack over que	stions	36-38 and define
Circ	le the correct spe	lling:					
39.	a. nephroraphy	b. neph	rorrapy	c. nephror	rhaphy	d. ne	phrorrhapy
40.	a. abdominoscop	y b. abder	nenoscopi	c. abdome	nscopy	d. ab	dominoschope
41.	a. perrycardium	b. perica	ardium	c. periocar	dium	d. par	racardium
[CF]	each of the follow , roots [R], and surd according to th	ffixes [S]) by w	riting them o	n the lines b			
	3		EXAM				
			hyperlip				
			<u>hyper</u> / li	R S			
		DEFINITION:	above or exces	ssive/fat/bloo	d condition		
42.	microlithiasis						
	/	/					
	_		-				
1.3	DEFINITION:sympathy						
45.		1					
	/		S				
	DEFINITION:						
44.	toxoid						
	/						
	11	J					
15	DEFINITION:						
45.	mesomorphic	1					
	/	/ R					

DEFINITION:

		EKIVIINOLOGY	: A PROGRAIVIN	1ED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE
46.	pancytopenia		,	
	P P P P P P P P P P P P P P P P P P P		_	
47.	DEFINITION: _ metastasis			
	/		_	
	1	U		
48.	acrodynia			
	CF DEFINITION:			
49.	tachycardia			
	P DEFINITION: _			
50.	pyogenesis /			
	CF DEFINITION:			
51.	adenitis			
	R DEFINITION: _	_		
52.	macrocephalo	us		
	P DEFINITION: _			
53.	paracentesis			
	P DEFINITION:			
54.	ultrasonograp	hy		
	P DEFINITION:			
55.	orthopedic			
	CF DEFINITION: _			
56.	angiomegaly			
	CF DEFINITION: _		_	

57.	psychiatry			
	/		_	
	DEFINITION:			
58.	carcinophobi			
	/		_/	
59.	endocrinolog			
	/		_/	
60.	rhinostenosis			
	/	D	_/	
	DEFINITION:			
61.	hypoesthesia	,	,	
	/	,	_/	
(1)				
62.	aerophagia	,	,	
	/		_/	
62	fibroma			
05.		1		
	/	S	_	
64	necrophilia			
04.	песторина	1		
		S	_	
65	sclerosis			
55.		1		
		Ś	_	
	DEFINITION:_			
66.	hemolysis			
		S		
	DEEINITION:			

36 MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE

81.		_cardia = <u>outside</u> the hea	ırt		
	a. exo-	b. endo-	c. retro-	d. para-	e. peri-
82.		_flexion = bend <u>before</u>			
	a. retro-	b. de-	c. ante-	d. anti-	e. re-
83.		_phonia = <u>difficult</u> speed	h		
	a. ab-	b. dys-	c. a-	d. eu-	e. para-
84.		_duction = to turn <u>away</u>	<u>from</u>		
	a. ad-	b. ab-	c. ecto-	d. pro-	e. ante-
85.		_phylaxis = to guard <u>befo</u>	<u>ore</u>		
	a. retro-	b. pro-	c. post-	d. peri-	e. anti-
86.		_arthritis = inflammation	of many joints		
	a. meta-	b. poly-	c. macro-	d. pan-	e. ultra-
87.		$_{cardia} = \underline{slow}$ heart			
	a. hypo-	b. tachy-	c. brady-	d. hyper-	e. dys-
88.		_vascular = <u>around</u> a blo	od vessel		
	a. intra-	b. inter-	c. para-	d. circum-	e. endo-
89.		_aerobic = pertaining to	life <u>without</u> air		
	a. an-	b. a-	c. hypo-	d. hyper-	e. dys-
90.		$_{\rm sexual} = {\rm pertaining\ to\ } \underline{{\rm b}}$	<u>oth</u> sexes		
	a. uni-	b. bi-	c. tri-	d. quadri-	e. poly-
91.		_plegia = <u>half</u> paralysis			
	a. quadri-	b. peri-	c. hemi-	d. bi-	e. mono-
Λ ft	er verifying	that you have circled the	correct energers as	hack over questions	72 01 and wei

Write the letter of the matching term component in the space after the meaning:

92.	black	 a.	tri-
93.	three	 b.	leuk/o
94.	red	 c.	cyan/o
95.	four	 d.	bi-
96.	white	 e.	uni-
97.	one	 f.	melan/o
98.	blue	 g.	quadri-
99.	two	 h.	erythr/o
100.	few	 i.	oligo-

^{*}After verifying that you have circled the correct answers, go back over questions 72-91 and write the meaning of each prefix listed.

ANSWERS TO PRACTICE EXERCISES

- 1. b. between
- 2. b. excessive
- 3. c. against
- 4. d. without
- 5. d. two
- 6. d. before
- 7. a. many
- 8. d. new
- 9. e. around
- 10. d. excessive
- 11. a. surgical repair
- 12. d. enlargement
- 13. e. inflammation
- 14. d. burst forth
- 15. d. reduction
- 16. b. death
- 17. b. poison
- 18. d. extremity
- 19. c. vessel
- 20. e. cell
- 21. c. black
- 22. c. ren/o
- 23. e. macro-
- 24. c. -gram
- 25. d. -pexy
- 26. c. -osis
- 27. c. -ectomy
- 28. c. vertebrae
- 29. c. bullae
- 30. c. specula
- 31. a. fungi
- 32. a. stomata
- 33. d. maculae
- 34. a. radii
- 35. b. diagnoses
- 36. d. colostomy
- 37. a. vasorrhaphy
- 38. c. abdominocentesis
- 39. c. nephrorrhaphy
- 40. a. abdominoscopy
- 41. b. pericardium
- 42. micro/lith/iasis

small/stone/presence or formation of

43. sym/path/y Р R S

together or with/ disease/condition or process of

- 44. tox/oid R S
- poison/resembling
- 45. meso/morph/ic R middle/form/

pertaining to

- 46. pan/cyto/penia CF
 - all/cell/abnormal reduction
- 47. meta/stasis Р

beyond, after, or change/stop or stand

48. acro/dynia CF S

extremity/pain

49. tachy/card / ia R

fast/heart/condition of

50. pyo/genesis CF

pus/origin or production

51. aden/itis

R

gland/inflammation

52. macro/cephal/ous R large or long/head/

pertaining to

53. para / centesis

alongside of/puncture for aspiration

54. ultra/sono/graphy

CF

beyond or excessive/ sound/process of recording

55. ortho/ped/ic CF R

straight, normal, or

- correct/foot/ pertaining to
- 56. angio/megaly CF S vessel/enlargement

- 57. psych, iatry R mind/treatment
- 58. carcino/phob/ia CF R S cancer/fear or

sensitivity/condition of

59. endo/crino/logist Р CF S

within/to secrete/one who specializes in the study or treatment of

- 60. rhino/sten/osis CF R nose/narrow/condition
- 61. hypo /esthes /ia R S below or deficient/

or increase

62. aero/phag/ia CF R air or gas/eat or swallow/condition of

sensation/condition of

- 63. fibr / oma R fiber/tumor
- 64. necro/ philia S CF

death/attraction for

65. scler/ osis R

hard/condition or increase

66. hemo, lysis CF

> blood/breaking down or dissolution

- 67. hydro, cephal, y CF R water/head/condition
- or process of 68. cyto / meter CF

cell/instrument for measuring

69.	cyanoytic
	CF S
	blue/pertaining to
70.	extra/vas/ ation
	${P}$ ${R}$ ${S}$
	outside/vessel/process
71.	hyper/ troph/ y
	P R S
	above or excessive/
	nourishment or
	development/
	condition or process
	of
72.	c. supra-

73. d. re-
74. c. pre-
75. c. post-
76. b. de-
77. c. mono-
78. e. trans-
79. c. super-
80. b. infra-
81. a. exo-
82. c. ante-
83. b. dys-
84. b. ab-
85. b. pro-
86. b. poly-

87.	c. brady-
88.	d. circum-
89.	a. an-
90.	b. bi-
91.	c. hemi-
92.	f. melan/o
93.	a. tri-
94.	h. erythr/o
95.	g. quadri-
96.	b. leuk/o
97.	e. uni-
98.	c. cyan/o
	d. bi-
100.	i. oligo-
	J



CHAPTER

2

Health Care Records

✓ Chapter 2 Checklist	LOCATION
☐ Read Chapter 2: Health Care Records and complete all programmed review segments.	pages 41-80
$\hfill\square$ Review the starter set of flash cards and term components related to Chapter 2.	back of book
 Complete the Chapter 2 Practice Exercises and Medical Record Analysis 2-1 and 2-2. 	pages 87-93
☐ Complete Medical Record Analysis 2-3 For Additional Study.	pages 94-96
☐ Complete the Chapter 2 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 2 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 2 terms.	CD-ROM

COMMON RECORDS USED IN DOCUMENTING THE CARE OF A PATIENT

To put your knowledge of medical terminology into use, you need to see how this language is used in everyday communication about patients. Learning the common abbreviations, symbols, forms, and formats used in recording patient care will help you to comprehend medical record documentation.

The History and Physical

The record that serves as a cornerstone for patient care is the **history and physical (H&P)** (Fig. 2-1). The H&P documents the patient's medical history and findings from the physical examination. It is usually the first document to be generated when a patient **presents** for care, and is most often recorded at a new patient visit or as part of a consultation.

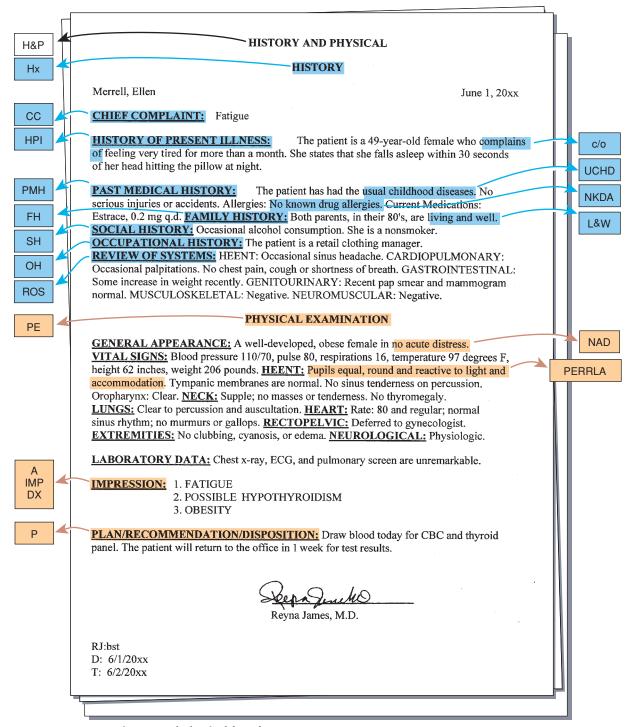


FIGURE 2-1 History and physical (H&P).

The first portion of the H&P, the history (Hx), documents subjective information from the patient's personal statement about his or her medical history and includes information regarding past injuries, illnesses, operations, defects, and habits. It begins with the chief complaint (CC), the patient's reason for seeking medical care. The chief complaint is usually brief, and is often recorded in the patient's own words, which are indicated by quotation marks (e.g., CC: "flu"). Often, especially in handwritten notes, the abbreviation c/o (complains of) is used. Details of the complaint are documented in the present illness (PI), or history of present illness (HPI), noting the

duration and severity of the complaint (i.e., how long the patient has had the complaint, and how bad it is). Notations about the patient's **symptoms (Sx)**, which are subjective evidence of illness, indicate what the patient is experiencing.

Information about the patient's past history (PH), or past medical history (PMH), is recorded next. This includes a record of information about the patient's past illnesses, starting with childhood, and it includes surgical operations, injuries, physical defects, medications, and allergies. The abbreviation UCHD (usual childhood diseases) is used here to record that the patient had all the "usual" or commonly contracted illnesses during childhood. The abbreviation NKA (no known allergies), or NKDA (no known drug allergies), indicates that the patient has had no known allergic reaction to a previously administered drug. The family history (FH) includes the state of health of the immediate family members (mother, father, and siblings), and the social history (SH) notes the patient's recreational interests, hobbies, and use of tobacco and drugs, including alcohol. A record of work habits that may involve health risks is included in the occupational history (OH).

The history is complete after documenting the patient's answers to questions related to the review of systems (ROS), or a systems review (SR), a head-to-toe review of the functions of all body systems. This review makes it possible to evaluate other symptoms that may not have been previously mentioned.

After the subjective data are recorded, the provider begins a physical examination (PE), or a physical (Px), to obtain objective information, facts that can be seen or detected by testing. Signs, or objective evidence of disease, are documented, and selected diagnostic tests are performed or ordered when further evaluation is necessary. Several abbreviations are used to document the findings of the physical examination, such as HEENT (head, eyes, ears, nose, and throat), PERRLA (pupils equal, round, and reactive to light and accommodation), NAD (no acute distress), and WNL (within normal limits).

The identification of a disease or condition is recorded in the **impression (IMP)**, diagnosis (Dx), or assessment (A), which is made after the evaluation of all subjective and objective data. Often, when one or more diagnoses are in question, a differential diagnosis is made using the abbreviation R/O (rule out). The possible conditions are identified, and further investigation, often involving diagnostic tests and procedures, is done to rule out or eliminate each suspect and to verify the final diagnosis.

Final notations include the health care provider's **plan (P)**, also called the **recommendation** or disposition. Here, the provider outlines strategies designed to remedy the patient's condition, including instructions to the patient and orders for medications, diagnostic tests, or therapies.

Often, physicians are required to dictate a current H&P before admitting a patient to the hospital (e.g., for elective surgery). When the patient is to have surgery, this report is often called a preoperative H&P.

Progress Notes

P:

After the initial H&P is recorded, progress notes are used to document the patient's continued care. The **SOAP** method of documenting a patient's progress is most common. The letters represent the order in which progress is noted as each complaint or problem is addressed (Fig. 2-2):

S: Subjective that which the patient describes

Objective O:observable information (e.g., test results and blood pressure readings)

patient's progress and evaluation of the plan's effectiveness; any newfound **A**: Assessment problem or diagnosis is also noted here

Plan decision to proceed or to alter the plan strategy

Make flash cards and memorize the following abbreviations used in documenting a history and physical examination and progress notes so that you will recognize them in the health records found throughout this text.

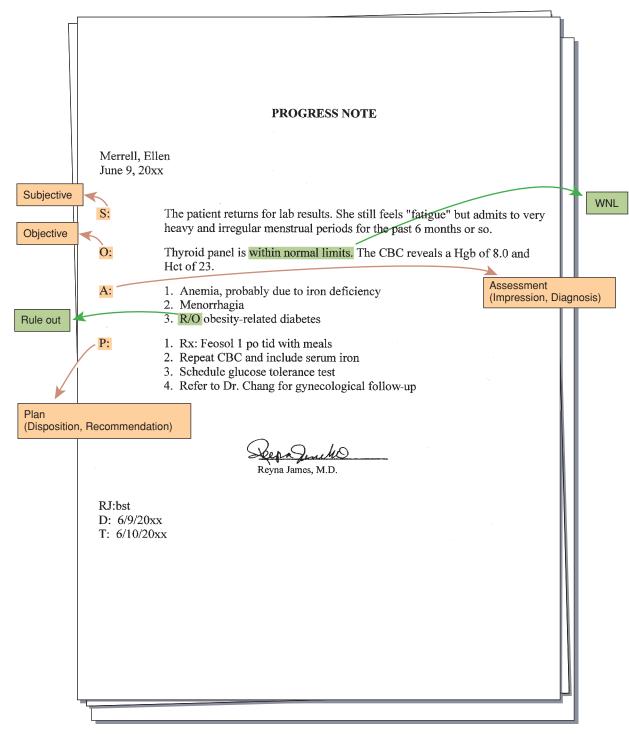


FIGURE 2-2 SOAP note.



Self-Instruction: Common Abbreviations Used in the History and Physical and Progress Notes

Study the following:

ABBREVIATION	EXPANSION
A	assessment
A&W	alive and well

ABBREVIATION	EXPANSION
CC	chief complaint
c/o	complains of
Dx	diagnosis
FH	family history
HEENT	head, eyes, ears, nose, and throat
H&P	history and physical
HPI, PI	history of present illness, present illness
Hx	history
IMP	impression
L&W	living and well
NAD	no acute distress
NKA, NKDA	no known allergies, no known drug allergies
0	objective information
ОН	occupational history
P	plan (recommendation, disposition)
PE, Px	physical examination
PERRLA	pupils equal, round, and reactive to light and accommodation
PH, PMH	past history, past medical history
R/O	rule out
ROS, SR	review of systems, systems review
S	subjective information
SH	social history
Sx	symptom
UCHD	usual childhood diseases
WNL	within normal limits

Programmed Review: Common Abbreviations Used in the History and Physical and Progress Notes

ANSWERS	REVIEW
history and physical	2.1 The H&P, or, is the first
	document generated in the care of a patient. It is divided into
history	two categories: the Hx, or, which provides all
subjective	information obtained from the patient, including his
physical	or her own perceptions; and the Px, or, or PE,
physical examination	or, which records all
objective	information that can be seen or verified by the examiner.

ANSWERS	REVIEW
chief complaint complains of present illness history, present illness symptoms	2.2 The first thing that is noted in the history is the CC, or, or what the patient c/o, or It is a brief explanation of why the patient is seeking medical care. Further details about the complaint are noted in the PI, or, or HPI, or, to report how long the patient has had the complaint and how bad it is. All subjective evidence of disease that the patient reports is noted as Sx, or
past history, past medical history usual childhood diseases no known allergies, no known drug allergies	2.3 The history continues by gathering information regarding past injuries, illnesses, operations, physical defects, medications, and allergies in the PH, or, or PMH, or, or PMH, or, or commonly contracted illnesses during childhood. NKA, or, and NKDA, or, indicate that the patient has had no known allergic reaction to a previously administered drug.
family history social history occupational history review of systems systems review	2.4 "Father, age 58, mother, age 54, brother, age 32, all L&W" is an example of an FH, or Notes about recreational interests, hobbies, and use of tobacco and drugs, such as alcohol, are noted in the SH, or Work habits that may involve health risks are included in the OH, or The history is complete after the patient answers questions related to a review of the functions of the body systems in the ROS, or, or SR,, or
physical physical examination signs head, eyes, ears nose, throat, pupils	2.5 The second portion of the H&P is the Px, or, or PE, or

ANSWERS	REVIEW
equal, round, reactive, light accommodation, within normal limits no acute distress	,, and to and; WNL, which means; and NAD, which indicates
impression, diagnosis assessment rule out	2.6 The identification of a disease or condition is recorded in the IMP, or; the Dx, or; or the A, or This is made after all subjective and objective data are evaluated. When one or more diagnoses are in question, a differential diagnosis is made using the abbreviation R/O, or
plan recommendation, disposition	2.7 An outline of strategies designed to remedy the patient's condition is noted in the provider's P, or, which is also called a or This section includes the provider's instructions to the patient and orders for medications, diagnostic tests, or therapies.
progress	2.8 After the initial history and physical is recorded, notes are used for further documentation of the patient's care. The letters "SOAP" represent the order in which progress is noted:
subjective	S:; that which the patient describes
objective	O:; observable information (e.g., test results or blood pressure readings)
assessment	A:; patient's progress and evaluation of the effectiveness of the plan
plan	P:; decision to proceed or alter the plan strategy

Hospital Records

The history and physical (Fig. 2-3) is often the first document entered into the patient's hospital record and is commonly required before elective admission for surgery. Physician's orders (Fig. 2-4) list the directives for care prescribed by the doctor who is attending to the patient. The **nurse's** notes (Fig. 2-5) and physician's progress notes (Fig. 2-6) chronicle the care throughout the patient's stay. In a difficult case, a specialist may be called in by the attending physician, and a consultation report is filed. If a surgical remedy is indicated, a narrative operative report (Fig. 2-7) is required of the primary surgeon. In this report, a detailed account of the operation is given, including the method of incision, technique, instruments used, types of suture, method of closure, and the patient's responses during the procedure and at the time of transfer to recovery. The anesthesiologist, who is in charge of life support during surgery, must file an **anesthesiologist's report**, which covers the anesthesia details, including the drugs used, the dose and time given, and the patient's vital status throughout the procedure. When a surgery or procedure involves a reasonable risk to the patient, an **informed consent** form must be signed by the patient to show that he or she has been advised of the risks and benefits of the proposed treatment as well as any alternatives. **Ancillary reports** note any additional procedures and therapies, including **diagnostic tests** and **pathology reports** (Fig. 2-8).

The final hospital document, which is recorded at the time of discharge, is the **discharge summary** (also termed the **clinical resume**, **clinical summary**, or **discharge abstract**). It is a summary of the patient's hospital care, including the date of admission, diagnosis, course of treatment, final diagnosis, and date of discharge (Fig. 2-9).

The sample medical records in Figures 2-3 through 2-9 chronicle the medical care of Carleen Perron, a 28-year-old woman who was seen in consultation by Dr. Patrick Rodden, an ear, nose, and throat (ENT) specialist who recommended a surgical remedy for the repeated infections she has had over the past 6 months.



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PREOPERATIVE HISTORY AND PHYSICAL

HISTORY

DATE OF ADMISSION: June 3, 20xx

HISTORY OF PRESENT ILLNESS:

The patient is a 28-year-old white female with a chief complaint of frequent, recurrent, suppurative tonsillitis. She has had some eight infections over the last 6 months and is admitted at this time for elective tonsillectomy. The surgery has been discussed with the patient and family, including risks and complications. The patient's internist is C. Camarillo, M.D.

MEDICATIONS: None.

ALLERGIES: None known.

PAST SURGICAL HISTORY: None.

PAST MEDICAL HISTORY: UCHD (usual childhood diseases).

REVIEW OF SYSTEMS: CARDIOVASCULAR: No high blood pressure, heart murmurs, or shortness of breath. PULMONARY: No chronic lung disease; no asthma. GASTRO-INTESTINAL: No hepatitis. RENAL HISTORY: Negative for infections. ENDOCRINE: No diabetes or thyroid disease. MUSCULOSKELETAL: Negative for arthritis. HEMATOLOGIC: No history of anemia or bleeding tendencies.

FAMILY HISTORY: Grandmother has history of diabetes.

GYNECOLOGICAL HISTORY: Regular menses.

SOCIAL HISTORY: The patient is a nonsmoker. Alcohol use was denied, and drug use was denied.

(continued)

JR:bst

D: 6/1/20xx T: 6/2/20xx

HISTORY AND PHYSICAL

Page 1

PT. NAME:

PERRON, CARLEEN

672894017

ID NO:

ROOM NO:

ATT. PHYS:

PATRICK RODDEN, M.D.

FIGURE 2-3 Preoperative history and physical (H&P) submitted to the hospital before surgical admission.

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PREOPERATIVE HISTORY AND PHYSICAL

PHYSICAL EXAMINATION

VITAL SIGNS: Afebrile, alert, oriented, normotensive. Blood Pressure: 124/80. Pulse: 84. Respirations: 18.

HEENT: PERRLA (pupils equal, round, and reactive to light and accommodation). Tympanic membranes are clear. Light reflex is present. No sinus tenderness on percussion. Oropharynx: Clear. Hypertrophic tonsils. No exudates. Nasopharynx: No masses. Larynx: Clear.

NECK: Supple; no masses or tenderness. No cervical adenopathy.

LUNGS: Clear to percussion and auscultation.

HEART: Rate: 84 and regular; normal sinus rhythm; no murmurs or gallops.

RECTOPELVIC: Deferred.

EXTREMITIES: No peripheral edema. No ecchymoses.

NEUROLOGICAL: Physiologically intact.

IMPRESSION: Chronic, recurrent tonsillitis. The patient is admitted for an elective tonsillectomy.

JR:bst

D: 6/1/20xxT: 6/2/20xx

> HISTORY AND PHYSICAL PAGE 2

PT. NAME: ID NO:

PERRON, CARLEEN

672894017

ROOM NO:

ATT. PHYS:

PATRICK RODDEN, M.D.

FIGURE 2-3 Continued.

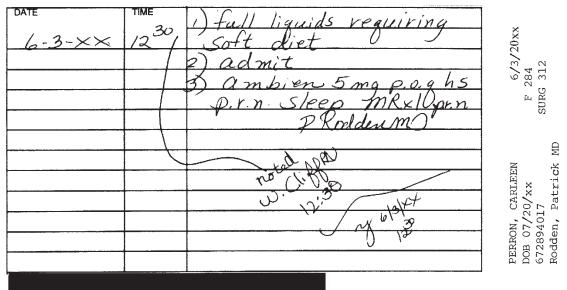
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DOCTOR: PLEASE STATE PERTINENT CLINICAL INFORMATION WHEN ORDERING RADIOLOGY PROCEDURES

WRITE WITH BALLPOINT INK PEN; PRESS HARD

DATE	TIME	Post-AD	
6-3-xx	100	1) VS at hx 4then 92h x4	
		then a4h	*
		2) bedrest EBRP when alert	/20xx
		B) continue IV's 80 mL/hr	6/3/ 284 312
		until Laking fluids well	6 F 2 SURG
		1) Vicodin (7.5 mg/500 mg) elixiv	
		15 ml p.o. 94h p.r.n. mild tomodpin	
		hydromorphone 4 mg IM	Œ Œ
		9 4h p.r.n. severe pain	CARLEEN 0/xx 7 Patrick
		Sice + liquids at hedside	ARELI /xx atr:
		& encourage PRodden MO	27
		Noted W. Cliff, RN. 6-3-XX 1130	PERRON, DOB 07/ 6728940 Rodden,
		W/13/1x4	PERI DOB 6728 Rodd
		/ 0 112	

WRITE WITH BALLPOINT INK PEN; PRESS HARD



PHYSICIAN'S ORDERS

FIGURE 2-4 Physician's orders: orders written by the anesthesiologist and surgeon and noted by the nursing staff during the patient's surgical care.

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DOCTOR: PLEASE STATE PERTINENT CLINICAL INFORMATION WHEN ORDERING RADIOLOGY PROCEDURES

WRITE WITH BALLPOINT INK PEN; PRESS HARD

DATE	TIME	T.O. Dr Rodden/G. Glen RN]
6/3/xx	0800		
			×
		Consent for tonsillectomy	720xx 34 22
		r	6/3/ 284 312
		DRodden Me	F SURG
		D Kodair.	01
		7.'	۵
			N A
		08.	CARLEEN 0/xx 7 Patrick
		P(arson RN) 6/3/XX	CARLI 0/xx 7 Patr:
		P(arson RN)	2.4
		6 3 XX	PERRON, DOB 07/ 6728940 Rodden,
		0800 9 3 30	PERR DOB 6728 Rodd
		-	

WRITE WITH BALLPOINT INK PEN; PRESS HARD

DATE	TIME	
JANE .	· *****	ANESTHESIA POST-OP CARE
6/3/XX ·	10:00	1) MASK OZ BL/MIN
		a.) VS PER PACY ROUTINE
		3.) DILAUDID (HYDROMORPHONE)
,		Ima IVa 15 min (max of 4ma/hr)
		4.) ZOFRAN 4mg 1/g 4h p.r.n.
		nausea
		5.) MAY BE DISCONTINUED WHEN
		AWAKE & VS STABLE X 1h
		Robert Oping, MD
		noted 6-3-xx
		P Carson PN
		10 10

Rodden, Patrick MD PERRON, CARLEEN DOB 07/20/xx 672894017

PHYSICIAN'S ORDERS

FIGURE 2-4 Continued.

DATE	TIME	REMARKS
/3/XX	0615	admitted & priented to poom 312. In no
, ,	,	sente distress. V5 state . Aprile NPO
		maintainel. Consition stable X. Grown RN
0/3/XX_	0800	To OR via gurney - swake & sciented
		To OR mia gurney- awake & sciented accompanied by her mother- condition stable
		K./Nowe K
/3/xx	1110	Geturned from PAR droway but proves pasily
		Skin warm & dry Color pink - V5 Stable -
		Throat dry unable to take sips of water very
		well - no nausea - % sence some throat
		medicated XT with 1M pain medication with
		desired affect - mother sury supportion & remain
		@ pedside - Using a bed par but unable to
<u>-</u>		Whedside - Using a bed par but unable to winote - IV infusing well K. Brown R
		, , , , , , , , , , , , , , , , , , ,
- v. N		

CENTRAL MEDICAL CENTER PATIENT'S PROGRESS NOTES **GENERAL CARE & TREATMENT** PT. NAME: PERRON, CARLEEN

ID NO: 672894017

ROOM NO: 312

ATT. PHYS: PATRICK RODDEN, M.D.

FIGURE 2-5 Nurse's notes: a recording by the nursing staff of the patient's progress made during general care and treatment.

DATE	TIME	REMARKS
/3/xx	1005	opnote
/		Chronic recurent forsillitas
		Procedure: tonsillectomy
		Surgion: P. Rodden 110
		(inisthesiologist: Robert Jong MD
		Procedure tolerated well
		P Rodden MO
/ /	1,20	
/3/xx	/2	post op Check
		VS stable
		Will teep pet overnight for observa
		Pl + OC
		Planto DC in am PRodden MD
		1 Coa acres
6/4/xx	0800	Doing much betty - no bleeding
7 1/ 17		Doing much better - no bleeding taking liquids friely, DC'd on flind
		DC alore Alina
		Menie Wan +ylenol.
		Rtoin 48h
		Rtoin 48h P.Rodden MD
		/

CENTRAL MEDICAL CENTER PHYSICIAN'S PROGRESS NOTES PT. NAME: PERRON, CARLEEN

ID NO: 672894017

ROOM NO: 312

ATT. PHYS: PATRICK RODDEN, M.D.

FIGURE 2-6 Physician's progress notes: physician's notations of the patient's progress throughout care.

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

OPERATIVE REPORT

DATE OF OPERATION: June 3, 20xx.

PREOPERATIVE DIAGNOSIS: Chronic tonsillitis.

POSTOPERATIVE DIAGNOSIS: Frequent, recurrent tonsillitis.

SURGEON: Patrick Rodden, M.D.

ASSISTANT SURGEON: None

ANESTHESIOLOGIST: Robert Jung, M.D.

ANESTHESIA: General.

SURGERY PERFORMED: Tonsillectomy.

DESCRIPTION OF OPERATION: After general anesthesia induction, with intubation, the McGivor mouth gag and tongue retractor were utilized for exposure of the oropharynx. Local anesthetic consisting of 6mL of 0.5% Xylocaine with 1:100,000 epinephrine was utilized. Tonsillectomy was carried out using dissection and air technique. The right tonsillectomy electrocoagulation Bovie suction was utilized for hemostasis. Examination of the nasopharynx was normal.

The patient tolerated the procedure well and went to the recovery room in good condition.

JR:as

D: 6/3/20xx T: 6/4/20xx

OPERATIVE REPORT

PT. NAME:

PERRON, CARLEEN

ID NO:

672894017

ROOM NO:

312

ATT. PHYS:

PATRICK RODDEN, M.D.

FIGURE 2-7 Operative report: surgeon's account of surgical procedure.

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

PATHOLOGY REPORT

PATIENT: PERRON, CARLEEN

28 Y (FEMALE)

DATE RECEIVED: June 3, 20xx. DATE REPORTED: June 4, 20xx

GROSS:

Received are two tonsils each 2.5 cm in greatest diameter.

MICROSCOPIC:

The sections show deep tonsilar crypts associated with follicular lymphoid hyperplasia. No bacterial granules are seen.

DIAGNOSIS:

CHRONIC LYMPHOID HYPERPLASIA OF RIGHT AND LEFT TONSILS.

Mary Needham, M.D.

MN:gds

D: 6/4/20xx T: 6/5/20xx

FIGURE 2-8 Pathology report.

COMMON DIAGNOSTIC TESTS AND PROCEDURES

Diagnostic tests and procedures are an integral part of patient care. Analyses of urine, stool, and blood specimens are found among the earliest recorded efforts to understand conditions of disease. The advance of technology has led to the development of many highly sophisticated laboratory tests, examples of which will be introduced in this text as they pertain to a specific body system. The two most common laboratory tests that are performed as part of a general health inquiry or to rule out a particular condition are the complete blood count, or CBC (see Fig. 6-7), and urinalysis, or UA (see Fig. 13-8).

It is valuable for health care professionals to recognize common diagnostic tests and procedures as well as the types of technology used to produce them.

THAT CONDITION WHICH AFTE PRINCIPAL DIAGNOSIS -	~ 1 .	_	THE REASON FOR ADMISSION TO THE HOSPITAL ONSILLITY	MEDICAL RECORDS USE
				474.00
FINAL DIAGNOSIS - NO ABBE	REVIATIONS			474.00
Sa	me			
SECONDARY DIAGNOSIS:				
COMPLICATIONS AND/OR COMORBIDI	TY:			
PRINCIPAL OPERATION/PROCEDURES				
SECONDARY OPERATIONS/PROCEDUR	onsill RES:	ecto	my	
CONDITION ON DISCHARGE DISCHARGE INSTRUCTIONS MEDICATIONS Tylenal PHYSICAL ACTIVITY Bed response FOLLOW-UP			☐ PRE-PRINTED INSTRUCTIONS GIVEN	
DATE OF SUMMARY IF DICTATED:	<u> </u>	- C		
	ATE DISCHARGED:		ATTENDING PHYSICIAN LEN	M.D.
RECORDS	CODED KEYED	FINAL CHECK	0.	6/03/20XX
CONSULTANTS:	AA	7		
	DP	R48		
	sc	12112		
CENTRAL MEDICAL	CENTER			
DIAGNOSIS REC				

FIGURE 2-9 Discharge summary (abstract): final report documented at time of discharge. This abstract is more commonly seen in outpatient surgery. See Medical Record 13-2 (page 662) for an example of a typical inpatient summary.

Diagnostic Imaging Modalities

Methods of diagnostic imaging have rapidly expanded since Wilhelm Roentgen discovered x-rays in 1885. By using x-rays, physicians and scientists could see through the body to produce images of the skeleton and other body structures. However, the radiation used to produce x-rays was found to be ionizing, a process that changes the electrical charge of atoms and has a possible effect on body cells. Overexposure to ionizing radiation can have harmful side effects (e.g., cancer), but over the years, researchers and scientists have found new ways to produce images that require significantly lower doses of radiation and minimize the risk to the patient.

Further advancement has led to the discovery and use of other imaging modalities (or techniques) that fall under the umbrella of the medical specialty known as **radiology**. Common ionizing modalities include radiography (x-ray), computed tomography (CT), and nuclear medicine. Common nonionizing modalities that present no apparent risk include magnetic resonance imaging (MRI) and sonography (US).

IONIZING IMAGING

Radiography (X-ray)

Radiography is an imaging modality that uses x-rays (ionizing radiation) to produce images of the body's anatomy for the diagnosis of a condition or impairment. An image is created when a small amount of radiation is passed through the body to expose a sensitive film. The image is called a radiograph (Fig. 2-10).

TERM TIP

In radiology, -graph is the preferred suffix used to refer to an x-ray record. It is taken by a radiologic technologist, also known as radiographer, and is interpreted or read by a radiologist, a physician specializing in the study of radiology.



FIGURE 2-10 First published radiograph, showing the hand and signet ring of Professor Roentgen's wife, produced on December 22, 1895.

Computed Tomography or Computed Axial Tomography

Computed tomography (CT), also known as computed axial tomography (CAT), is a radiologic procedure that uses a machine, called a scanner, to examine a body site by taking a series of cross-sectional (tomographic) x-ray films in a full-circle rotation. A computer then calculates and converts the rates of absorption and density of the x-rays into a three-dimensional picture on a screen (Fig. 2-11).

Nuclear Medicine Imaging or Radionuclide Organ Imaging

Nuclear medicine imaging, or radionuclide organ imaging, uses an injected or ingested radioactive isotope (also called a radionuclide), or a chemical that has been tagged with radioactive compounds that emit gamma rays. A gamma camera detects and produces an image of the distributed gamma rays in the body. This technique is useful in determining the size, shape, location, and function of body organs, such as the brain, lungs, bones, and heart (Fig. 2-12).

NONIONIZING IMAGING

Magnetic Resonance Imaging

Magnetic resonance imaging (MRI) is a nonionizing imaging technique using magnetic fields and radiofrequency waves to visualize anatomic structures within the body. A large magnet surrounds

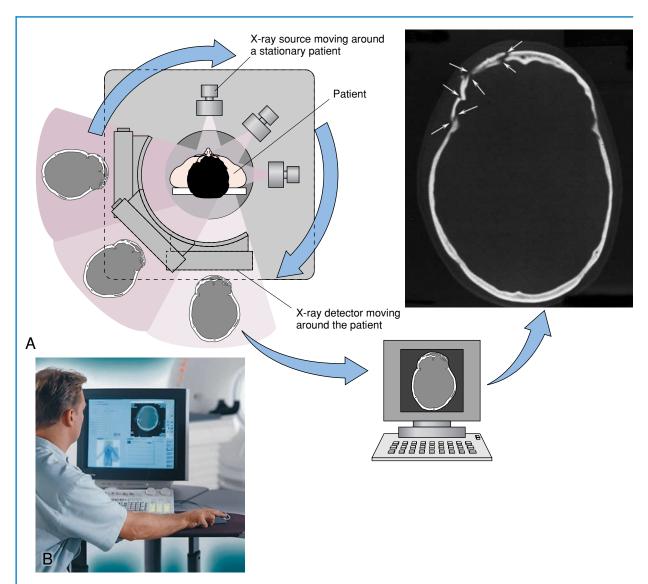


FIGURE 2-11 A. Principles of computed tomography (CT). Inset: CT showing multiple open fractures (arrows) of skull. B. CT imaging process.

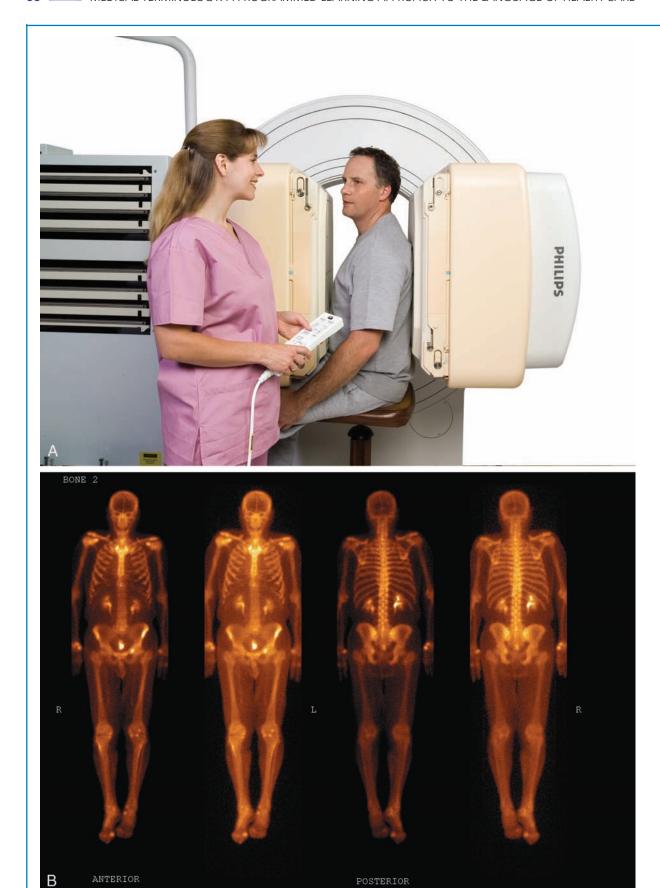


FIGURE 2-12 Nuclear medicine image. A. Gamma camera used to produce the image. B. Radionuclide whole-body bone scan.

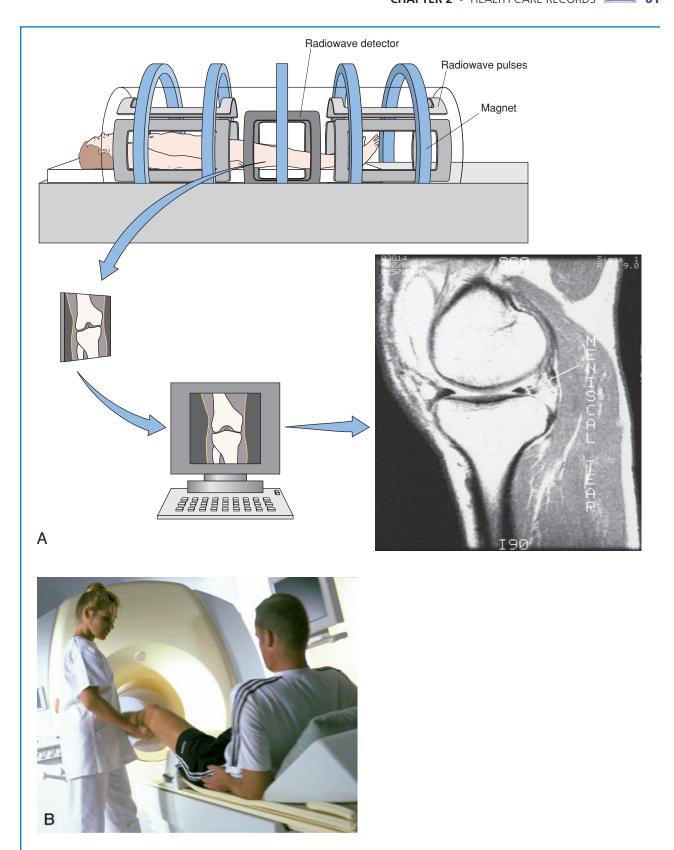
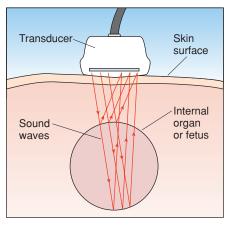


FIGURE 2-13 A. Principles of magnetic resonance imaging (MRI). Patient is positioned within a magnetic field as radiowave signals are conducted through the selected body part. Energy is absorbed by tissues and then released. A computer processes the released energy and formulates the image. Inset, MRI of the knee (lateral view) identifying a torn meniscus. B. MRI unit.





Energy in the form of sound waves is reflected off internal organs, or off the fetus during pregnancy, and transformed into an image on A a TV-type monitor.

FIGURE 2-14 A. Principles of sonography. B. Obstetrical sonography.

the patient as a scanner subjects the body to a radio signal that temporarily alters the alignment of the hydrogen atoms in the patient's tissue. As the radio signal is turned off, the atoms realign, and the energy produced is absorbed by detectors and then interpreted using computers to provide detailed anatomic images of the body part. This modality is particularly useful in examining soft tissues, joints, and the brain and spinal cord (Fig. 2-13).

Magnetic resonance angiography (MRA) applies magnetic resonance technology in the study of blood flow (see Figure 8-15).

Sonography

Sonography, which is also known as diagnostic ultrasound (U/S or US), is the use of high-frequency sound waves (ultrasound) to visualize body tissues. Ultrasound waves sent through a scanning device, called a transducer, are reflected off structures within the body and then analyzed by a computer to produce moving images on a monitor. Sonography is used to examine many parts of the body, including the abdomen, male and female reproductive organs, thyroid and parathyroid glands, and the cardiovascular system (Fig. 2-14).

USE OF CONTRAST

Some imaging procedures require the internal administration of a **contrast medium** to enhance the visualization of anatomic structures. There are many different kinds of contrast media, including barium, iodinated compounds, gases (such as air or carbon dioxide), and other chemicals that are known to increase visual clarity. Depending on the contrast medium, it may be injected, swallowed, or introduced through an enema or catheter. (Compare Figs. 13-5 and 13-7 [x-rays of the urinary tract], which show images taken with and without contrast.)



Programmed Review: Diagnostic Imaging

ANSWERS	REVIEW
ionizing	2.9 The diagnostic modality using radiation
	(x-rays) to produce images of the body's anatomy is called
radiology	, a term derived from the combining form radi/o,

ANSWERS	REVIEW
study of radiograph radiologic technologist radiologist cancer	meaning radiation, and the suffix <i>-logy,</i> meaning The x-ray image is called a It is taken by a radiographer or and then interpreted by a physician who specializes in the study of radiology, called a Ionizing radiation has an effect on body tissue, and overexposure can have harmful side effects, such as
CT process of recording tomo computer	2.10 The application of computer technology to medical imaging was first applied with the development of computed tomography, which is abbreviated as <i>Tom/o</i> , a combining form meaning to cut, and the suffix <i>-graphy</i> , meaning, give clues to how the CT scanner operates. The scanner is used to take a series of cross-sectional or graphic x-ray films that are converted by a into a three-dimensional picture on a screen.
radionuclide organ ionizing isotope gamma function	2.11 Nuclear medicine imaging, or imaging, is another modality using radiation. The technique involves the injection or ingestion of a radioactive that emits gamma rays. An image is produced using a camera to detect the distribution of the gamma rays. Radionuclide organ images are useful in determining the size, shape, location, and of body organs.
risk, magnetic resonance imaging sonography, magnet radio soft sound recording	2.12 Two major nonionizing imaging modalities have shown no apparent to patients: MRI, or, and ultrasound, or, and ultrasound, or, and and and waves to visualize anatomic structures within the body, especially tissues. Sonography, from the combining form son/o, meaning, and the suffix -graphy, meaning a process of, uses high-frequency sound waves to produce body images.

COMMON MEDICAL RECORD TERMS RELATED TO DISEASE

The following terms related to disease are common in medical records. Learn them as a foundation on which you will build as your vocabulary expands.



Self-Instruction: Disease Terms

Study the following:

TERM	MEANING
acute ă-kyūt'	sharp; having intense, often severe symptoms and a short course
chronic kron' ik	a condition that develops slowly and persists over a period of time
benign be-nīn'	mild or noncancerous
malignant mă-lig' nănt	harmful or cancerous
degeneration dē-jen-ĕr-ā' shŭn	gradual deterioration of normal cells and body functions
degenerative disease dē-jen'ĕr-ă-tiv di-zēz'	any disease in which deterioration of the structure or function of tissue occurs
diagnosis dī-ag-nō'sis	determination of the presence of a disease based on an evaluation of symptoms, signs, and test findings (results) (<i>dia</i> = through; <i>gnosis</i> = knowing)
etiology ē-tē-ol'ŏ-jē	study of the cause of a disease (<i>etio</i> = cause)
exacerbation ek-zas-ĕr-bā' shŭn	increase in the severity of a disease, with aggravation of symptoms $(ex = \text{out}; acerbo = \text{harsh})$
remission rē-mish'ŭn	a period in which symptoms and signs stop or abate
febrile feb'ril	relating to a fever (elevated temperature)
idiopathic id'ē-ō-path' ik	a condition occurring without a clearly identified cause (<i>idio</i> = one's own)
localized lō'kăl-īzd	limited to a definite area or part
systemic sis-tem' ik	relating to the whole body rather than to only a part
malaise mă-lāz'	a feeling of uneasiness or discomfort; often the first indication of illness
marked markt'	significant

TERM	MEANING
morbidity mōr-bid'i-tē	sick; a diseased state
mortality mōr-tal' i-tē	the state of being subject to death
prognosis prog-nō' sis	foreknowledge; prediction of the likely outcome of a disease based on the general health status of the patient along with knowledge of the usual course of the disease; often noted in one word (e.g., "Prognosis: good")
progressive prō-gres' iv	pertaining to the advance of a condition as the signs and symptoms increase in severity
prophylaxis prō-fi-lak'sis	a process or measure that prevents disease (pro = before; phylassein = guard)
recurrent rē-kŭr'ĕnt	to occur again; describes a return of symptoms and signs after a period of quiescence (rest or inactivity)
sequela sē-kwel'ă	a disorder or condition usually resulting from a previous disease or injury
sign sīn	a mark; objective evidence of disease that can be seen or verified by an examiner
symptom simp' tŏm	subjective evidence of disease that is perceived by the patient and often noted in his or her own words
syndrome sin' drōm	a running together; combination of symptoms and signs that give a distinct clinical picture indicating a particular condition or disease (e.g., menopausal syndrome)
noncontributory non-kŏn-trĭ' byū-tōr-ē	not involved in bringing on the condition or result
unremarkable ŭn-rē-mark'ă-bel	common; not out of the ordinary or significant



Programmed Review: Disease Terms

	ANSWERS	REVIEW			
	sign	2.13 Originating from the Latin word for a mark, the term			
		is used to describe objective evidence of disease that can be seen or			
		verified by an examiner. The subjective evidence of disease that is			
	symptom	perceived by the patient is a Many different signs			
	malaise	and symptoms manifest disease in the body. The term is			
		used to describe a patient who feels unwell. A patient is considered to			
	febrile	be if he or she has an increase in body temperature, and			
	a	to befebrile if he or she is without a fever. Conditions limited to a			
	localized	definite area or part are considered to be, whereas those			
	systemic	that are affect the whole body.			

ANSWERS	REVIEW
acute chronic progressive exacerbation remission recurrent	2.14 Some conditions have intense, often severe or onset, whereas others that are develop slowly and persist over time. A condition is considered to be when the symptoms and signs advance with increased severity. A flare-up, or, occurs when there is an increase in the severity of symptoms. A condition is said to be in during the period in which signs and symptoms have stopped. The term describes a return of symptoms and signs after a period of inactivity.
not degeneration	2.15 Degenerative disease occurs as a result of gradual deterioration of tissue with loss of function. The prefix <i>de-</i> , meaning from, down, or, is used in the term describing this process:
etiology idiopathic malignant, benign marked	2.16 The cause or of a disease is often unknown. A condition is considered to be when there is no clear identifying cause. If a condition is cancerous, it is termed, and if it is noncancerous, it is A patient with significant weakness can be said to have weakness.
diagnosis prognosis	2.17 The doctor makes a when naming a disease and gives a when predicting its likely outcome.
prophylaxis	2.18 A is a process or measure that prevents disease.
syndrome	2.19 The term describing a combination of symptoms and signs that give a distinct clinical picture is called a syndrome. For example, hot flashes, weight gain, mood swings, and irregular menstruation are signs and symptoms that indicate a woman is going through menopause, a condition known as menopausal
sequela sequelae	2.20 A sequel is something that follows something else. The medical term that refers to a disorder or condition that results from a previous disease or injury is called The plural of sequela is
noncontributory unremarkable	2.21 When patient care data are not related to bringing on or causing a condition, they are said to be Similarly, information that is not significant or out of the ordinary is said to be

MEDICAL RECORD ABBREVIATIONS

The following table lists common medical abbreviations used in patient care documentation. They represent "acceptable" terms that are used extensively throughout this text. Remember that individual medical facilities provide their own list of acceptable terms and abbreviations that may not be used elsewhere. Memorize the terms and abbreviations from this list, and plan to adapt them to the variations you encounter.

ERROR PRONE ABBREVIATIONS AND SYMBOLS

Medical errors caused by illegible writing and misinterpretations of medical abbreviations and symbols have led health care agencies, such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), to require that medical facilities publish lists of authorized abbreviations for use by all personnel, including a list of abbreviations and symbols that are unacceptable.

In this text, the abbreviations and symbols that have been identified as error prone are in red and the preferred use noted in brackets ([]). Depending on the medical facility, the use of these abbreviations and symbols may or may not be deemed to be acceptable; therefore, it is very important to study them so that you can properly interpret their meaning if they are used in a medical record. Those included on the official JCAHO "Do Not Use" list are marked by an asterisk (*).



Self-Instruction: Medical Facilities and Patient Care Abbreviations

Study the following:

ABBREVIATION	MEANING	
MEDICAL CARE FACILITIES		
CCU	coronary (cardiac) care unit	
ECU	emergency care unit	
ER	emergency room	
ICU	intensive care unit	
IP	inpatient (a registered bed patient)	
OP	outpatient	
OR	operating room	
PACU	postanesthetic care unit	
PAR	postanesthetic recovery	
post-op or postop	postoperative (after surgery)	
pre-op or preop	preoperative (before surgery)	
RTC	return to clinic	
RTO	return to office	
PATIENT CARE		
B	bilateral	
BRP	bathroom privileges	

ABBREVIATION	MEANING	
СР	chest pain	
DC or D/C	discharge, discontinue [spell out discharge or discontinue]	
ЕТОН	ethyl alcohol	
Ĺ	left	
R	right	
m	murmur	
pt	patient	
RRR	regular rate and rhythm	
SOB	shortness of breath	
Tr	treatment	
Tx	treatment or traction	
VS	vital signs	
Т	temperature	
P	pulse	
R	respiration	
BP	blood pressure	
Ht	height	
Wt	weight	
WDWN	well-developed and well-nourished	
y/o or y.o.	year old	
#	number or pound; if used before a numeral, it means number (e.g., #2 = number 2); if used after a numeral, it means pound (e.g., 150# = 150 pounds)	
С	Celsius, centigrade	
F	Fahrenheit	
9	female	
ð	male	
0	degree, or hour	
\uparrow	increased	
↓	decreased	
φ	none or negative	
Ŷ	standing	
2	sitting	
0-	lying	

Programmed Review: Medical Facilities and **Patient Care Abbreviations**

ANSWERS	REVIEW		
	2.22 The patient seeking emergency care is often seen in the ECU,		
emergency care unit	or, most commonly known as		
ER	the hospital Depending on the circumstances of the accident		
outpatient	or illness, the patient is treated as an OP, or, or is		
inpatient	admitted as an IP, or Sometimes, in a critical case,		
intensive	the patient is transferred directly to the ICU, or		
care unit	If surgery is necessary, it is performed in the		
operating room	OR, or, after which a period of recovery		
postanesthetic care	is made in the PACU, or		
unit			
patient	2.23 While hospitalized, the pt, or, is seen by the		
	attending physician and is cared for by the nursing staff. The doctor		
treatment	writes orders for all Tx, or, including how		
vital signs, temperature	often the VS, or;		
pulse, respiration, blood	P, or; R, or; and BP, or		
pressure), are to be taken and whether the patient		
bathroom privileges	is to have BRP, or The nurses must		
	document the care and report any abnormal findings, such as		
chest pain, shortness	CP, or, and SOB, or		
of breath	The doctor usually asks the patient to		
return to office	RTO, or within a few days		
discharge	of DC, or, from the hospital.		

PHARMACEUTICAL ABBREVIATIONS AND SYMBOLS

Pharmaceutical abbreviations and symbols are frequently used in documenting patient care. They are found throughout the medical record. Efficient medical record keeping and effective communication among health care workers depends on knowledge of commonly used pharmaceutical abbreviations and symbols.

Units of Measure

Both the metric and apothecary systems are used to express pharmaceutical units of measure. Consult your medical dictionary for a complete listing of units of measurement and conversion formulas.

THE METRIC SYSTEM

Metric is the most commonly used system of measurement in health care. It is a decimal system based on the following units:

length (39.37 inches) meter (m)

liter (L) volume (1.0567 U.S. quarts)

gram (g or gm) weight (15.432 grains)

THE APOTHECARY SYSTEM

The apothecary system is a method of liquid and weight measures that was used by the earliest chemists and pharmacists. The liquid measure was based on one drop. The weight measure was based on one grain of wheat. Although the small apothecary measures are rarely used, the larger ones (e.g., fluid ounces) are still common.



Self-Instruction: Units of Measure

Study the following:

ABBREVIATION	MEANING	
METRIC		
cc	cubic centimeter; 1 cc = 1 mL [use the metric equivalent mL]	
cm	centimeter; 2.5 cm = 1 inch	
g or gm	gram	
kg	kilogram; equal to 1,000 grams or 2.2 pounds	
L	liter	
mg	milligram; equal to one-thousandth (0.001) of a gram	
mL or ml	milliliter; equal to one-thousandth (0.001) of a liter	
mm	millimeter; equal to one-thousandth (0.001) of a meter	
cu mm or mm ³	cubic millimeter	
APOTHECARY		
fl oz	fluid ounce	
gr	grain	
gt	drop (gutta = drop)	
gtt	drops	
dr	dram; equal to 1/8 ounce	
OZ	ounce	
1b or #	pound; equal to 16 ounces	
qt	quart; equal to 32 ounces	



Programmed Review: Units of Measure

ANSWER	REVIEW	
Metric	2.24 is the most commonly used system of measurement in health care.	
gm kg one mg gram	2.25 Gram, abbreviated g or, is a weight measure. <i>Kilo-</i> is a prefix meaning one thousand. Therefore, a kilogram, or, contains thousand grams (2.2 pounds). Body weight is often measured in kilograms instead of pounds. <i>Milli-</i> is a prefix signifying one-thousandth. Therefore, a milligram, or, is one-thousandth of a	
L quart mL, liter	2.26 Liter, abbreviated, is a volume measure. One liter is equal to 1.0567 U.S. qt, or A milliliter, which is abbreviated as ml or, is one-thousandth of a	
length mm meter cm centimeters	2.27 Meter is a measure of There are 39.37 inches in a meter. A millimeter, which is abbreviated as, is one-thousandth of a <i>Centi-</i> is a prefix meaning one hundred. A centimeter, which is abbreviated as, is one-hundredth of a meter. There are 2.5 cm or in an inch. The diameter of a lesion is commonly measured in centimeters.	
cubic centimeter 1, milliliter, 3 cu mm	2.28 The measure 1 cc, or, is equal to, not as mm ³ .	
fluid ounce, drop drops, pound, quart	2.29 The larger measures of the apothecary system (such as fl oz, or; gt, or; gtt, or; and qt, or) are still commonly used.	

Medication Administration

Prescribed medications can be administered to a patient in a variety of ways, depending on the indication for the drug and the patient's status. The following table gives an overview of drug forms and routes of administration, including abbreviations and symbols.



Self-Instruction: Routes of Medication Administration

Study the following:

DRUG FORM	ROUTE OF ADMINISTRATION	MEANING
SOLID AND SEMISOLID FORMS		
tablet (tab)	oral [per os (p.o.)]	by mouth
capsule (cap)	sublingual (SL)	under the tongue
	buccal	in the cheek
suppository (suppos)	vaginal [per vagina (PV)]	inserted in the vagina
	rectal [per rectum (PR)]	inserted in the rectum
LIQUID FORMS		
fluid	inhalation	inhaled through the nose or mouth
	aerosol	spray
	nebulizer	device used to produce a fine spray or mist, often in a metered dose
parenteral	by injection	
	intradermal (ID)	within the skin
	intramuscular (IM)	within the muscle
	intravenous (IV)	within the vein
	subcutaneous (SC, SQ, or sub-Q)	under the skin [write out subcut or subcutaneous]
cream, lotion, ointment	topical	applied to the surface of the skin
other delivery systems	transdermal	absorption of drug through unbroken skin
	implant	a drug reservoir imbedded in the body to provide continual infusion of a medication (e.g., insulin pump)



Programmed Review: Routes of Medication Administration

ANSWER	REVIEW	
	2.30 Drugs are administered in many ways. The most common	
tablet	form is the tab, or, which is usually taken p.o., or	
by mouth, sublingual	, under the tongue, or (SL),	

ANSWER	REVIEW	
buccal	and sometimes in the cheek, or The word per	
	means by or through. Suppositories are inserted PR, or	
through rectum, through	, or PV, or	
vagina	The parenteral route of administration is	
injection, intradermal	by; ID, or; IM, or	
intramuscular, intravenous	; IV, or; or sub-Q,	
subcutaneous	or Transdermal pertains to penetration	
through	the skin.	

THE PRESCRIPTION

A **prescription** is a written direction by a physician for dispensing or administering a medication to a patient. It is an order to supply a named patient with a particular drug of a specific strength and quantity, along with precise instructions for administration. The prescription is a legal document that must be written in a specific format that includes the name, strength, and amount of the drug, its indications for use, and the Sig:, a label with instructions to the patient (Fig. 2-15).

Drug Names

Every drug is assigned a **chemical name** at the time it is invented in the laboratory. It is the formula for the drug and is written exactly according to its chemical structure. The generic name is the official, nonproprietary name given to a drug. The trade or brand is the manufacturer's name for a drug.

CENTRAL MEDICAL GROUP, INC. Patrick Rodden, M.D. DEA #: AR 0000000 201 Medical Center Drive Central City, US 90000-1234
Name of Patient <u>Carlien Perron</u> Date <u>6/4/xx</u>
Rx Tylenol & codeine No. 3 24
Rx Tylenol & codeine no. 3 #24 Sig: tab + g4h prn pain
SUBSTITUTION PERMITTED M.D. DISPENSE AS WRITTEN
May refill times

FIGURE 2-15 Sample prescription.

For example:

chemical name 1-[[3-(6,7-dihydro-1-methyl-7-oxo-3-propyl-1H-pyrazolo[4,3-

d]pyrimidin-5-yl)-4-ethoxyphenyl]sulfonyl]-4-methylpiperazine

citrate

generic name sildenafil

brand or trade name Viagra (Pfizer Pharmaceutical Company)

Appendix C lists commonly prescribed drugs, including their classifications and common therapeutic uses.



Programmed Review: The Prescription and Drug Names

ANSWER	REVIEW	
prescription	2.31 Rx is a symbol meaning recipe or A	
	prescription is a direction by a physician for dispensing a	
medication or drug	to a patient. It includes the name, strength, and	
	quantity of a drug along with the indication for its use and the Sig:, or	
instruction	the label that provides specific for administration.	
	Brand and generic names must be provided on all medication orders.	
generic	The name is the official, nonproprietary name for a	
brand	drug, and the trade or name is given to a drug by the	
	manufacturer. Related to drug formulation, 8-chloro-1-methyl-	
	6-phenyl-4H-s-triazolo[4,3-a] [1,4]benzodiazepine is a	
chemical	name.	

Prescription Abbreviations

Historically, prescriptions were written in Latin and the words were abbreviated for convenience. For example, quarter in die, which is Latin for four times a day, is abbreviated as q.i.d. The periods indicated the abbreviation of three words. In health care practice today, you will find variations that include or exclude the periods and that use uppercase instead of lowercase letters (e.g., QID vs qid). To assist with readability and recognition, the periods are included in the Latin prescription abbreviations in this text. The trend, however, is to discourage their use, especially in handwritten documentation, because they can be misinterpreted. Roman numerals were used exclusively in the early days and are still being used today, but most pharmacy organizations now promote the use of Arabic numerals only.



Self-Instruction: Common Prescription Abbreviations and Symbols

Study the following:

ABBREVIATION	MEANING	LATIN†
TIME AND FREQUENCY		
ā	before	ante
a.c.	before meals	ante cibum

ABBREVIATION	MEANING	LATIN [†]
a.m.	before noon	ante meridiem
b.i.d.	twice a day	bis in die
d	day	
h	hour	hora
h.s.	at the hour of sleep (bedtime) [spell out <i>bedtime</i>]	hora somni
noc.	night	noctis
p	after	post
p.c.	after meals	post cibum
p.m.	after noon	post meridiem
p.r.n.	as needed	pro re nata
q	every	quaque
q.d. (*)	every day [NEVER USE: spell out every day or daily]	quaque die
qh	every hour	quaque hora
q2h	every 2 hours	
q.i.d.	four times a day	quarter in die
q.o.d. (*)	every other day [NEVER USE: spell out <i>every other day</i>]	quaque altera die
STAT	immediately	statium
t.i.d.	three times a day	ter in die
wk	week	
yr	year	
MISCELLANEOUS		
AD	right ear [spell out right ear]	auris dextra
ad lib.	as desired	ad libitum
amt	amount	
aq	water	aqua
AS	left ear [spell out left ear]	auris sinistra
AU	both ears [spell out both ears]	auris unitas
\overline{c}	with	cum
NPO	nothing by mouth	non per os
OD	right eye [spell out right eye]	oculus dexter
OS	left eye [spell out left eye]	oculus sinister
OU	both eyes [spell out both eyes]	oculi unitas

ABBREVIATION	MEANING	LATIN [†]
per	by or through	
p.o.	by mouth	per os
PR	through rectum	per rectum
PV	through vagina	per vagina
Rx	recipe; prescription	
<u>s</u>	without	sine
Sig	label; instruction to the patient	signa
<u>ss</u>	one-half [spell out <i>one-half</i> or use 1/2]	semis
wa	while awake	
X	times or for; <i>x</i> 6 means <i>six times</i> while <i>x</i> 2 <i>d</i> means <i>for two days</i>	
>	greater than [spell out greater than]	
<	less than [spell out less than]	
Ť	one (modified lowercase Roman numeral i)	
ii	two (modified lowercase Roman numeral ii)	
iii	three (modified lowercase Roman numeral iii)	
iv	four (modified lowercase Roman numeral iv)	
I, II, III, IV, V, VI, VII, VIII, IX, X	uppercase Roman numerals from 1 to 10	

^{*}The original Latin is supplied when applicable.



Programmed Review: Common Prescription Abbreviations and Symbols

ANSWERS	REVIEW
before, ā	2.32 Ante, meaning, is abbreviated as Before
a.m., before meals	noon is abbreviated, and a.c. stands for
after, p	Post, meaning, is abbreviated After noon is
p.m., after meals	abbreviated, and p.c. stands for
d, noc, h.s.	Day is abbreviated, night as, and bedtime as
STAT	Some medications must be taken immediately or If a

ANSWERS	REVIEW	
as needed	medication is taken p.r.n., it is taken If the	
lib.	patient can have as much as desired, the abbreviation is ad	
	Sometimes, such as before surgery, the doctor wants the patient to	
NPO	take nothing by mouth, or Some drugs are taken twice	
b.i.d., t.i.d.	a day, or; three times a day, or; or q.i.d., or	
four, wk	times a day. Week is abbreviated, and year	
yr, q	is abbreviated The abbreviation for every is	
qh	Every hour is abbreviated Every 2 hours is abbreviated	
q2h, for	The symbol x, meaning times or, is used to	
x7d	abbreviate the words "for seven days" as and "ten	
x10, every day	times" as, Use of q.d., meaning, and	
every other day	of q.o.d. , meaning, are error-prone	
Do Not Use	abbreviations on the official "" list provided	
NEVER	by JCAHO and should be used. They should be	
spelled	out instead.	
I, II, III IV, V, VI, VII,VIII, IX, X	2.33 Roman numerals 1 through 10 are written as,,,, and, respectively. The modified	
i, ii	lowercase Roman numeral that means one is Two is,	
iii, iv, s s	three is, and four is The symbol for one-half is, for	
c, s	with is, and for without is	
	2.34 Sinister, meaning left, and dexter, meaning right, are referenced in abbreviations for the eyes and ears. The right eye, or	
OD	oculus dexter, is abbreviated as The left eye, or oculus	
OS	sinister, is abbreviated Oculi unitas, referring to both eyes,	
OU	is abbreviated Auris refers to ear. The right ear is abbreviated	
AD, AS, AU	as, the left ear as, and both ears as Because	
	abbreviations related to the eyes and ears have been misinterpreted, it	
spelled	is recommended that they be out instead. The symbols	
>,<	for greater than () and less than () have also been confused with	
spelled	each other, and it is recommended that they also be	
	out instead.	



CAUTION Examples of Error-Prone Abbreviations and Symbols



Listed below is a sampling of abbreviations and symbols deemed to be error-prone, including the risk for misinterpretation and the preferred use. Those included on the official "Do Not Use" List published by the Joint Commission of Accreditation on Healthcare Organizations (JCAHO) are marked by an asterisk (*).

A comprehensive list of error-prone abbreviations, symbols, and dose designations is available through the Institute for Safe Medication Practices (http://www.ismp.org/). JCAHO provides the official "Do Not Use" List on their website (http://www.jointcommission.org/).

ERROR PRONE ABBREVIATION	MEANING	RISK	PREFERRED USE
AD, AS, AU	right ear, left ear, both ears	mistaken as OD, OS, OU (right eye, left eye, both eyes)	spell out <i>right ear,</i> <i>left ear</i> , or <i>both ears</i>
OD, OS, OU	right eye, left eye, both eyes	mistaken as AD, AS, AU (right ear, left ear, both ears)	spell out <i>right eye,</i> <i>left eye</i> , or <i>both eyes</i>
сс	cubic centimeter	mistaken as units	use the metric equivalent <i>mL</i>
DC, D/C	discharge, discontinue	mistaken for "discontinue" when followed by medications prescribed at the time of discharge	spell out <i>discontinue</i> or <i>discharge</i>
h.s.	bedtime	mistaken as "half- strength"	spell out bedtime
q.d. (*)	every day	mistaken for q.i.d. when the period after the "q" is sloppily written to look like an "i"	NEVER USE – spell out every day or daily

ERROR PRONE ABBREVIATION	MEANING	RISK	PREFERRED USE
q.o.d. (*)	every other day	mistaken for q.d when the "o" is mistaken for a period	NEVER USE – spell out every other day
SC, SQ, sub-Q	subcutaneous	mistaken for SL (sublingual) or 5Q ("5 every")	spell out subcut or subcutaneously
ss	one half	mistaken as "55"	use one-half or $\frac{1}{2}$
>, <	greater than, less than	mistaken for each other	spell out <i>greater than</i> or <i>less than</i>

RECORDING DATE AND TIME

The date and time are usually required in entries in a medical record. Always include the month, day of the month, and the year (e.g., 12/25/xx); sometimes eight digits are required (e.g., 01/08/20xx). Military time is often used to indicate the exact time of day (Fig. 2-16).

STANDARD	MILITARY	STANDARD	MILITARY
1:00 a.m.	0100 (zero one hundred hours)	1:00 p.m.	1300 (thirteen hundred hours)
2:00 a.m.	0200 (zero two hundred hours)	2:00 p.m.	1400 (fourteen hundred hours)
2:15 a.m.	0215 (zero two fifteen hours)	2:15 p.m.	1515 (fifteen hundred fifteen hours)
3:00 a.m.	0300 (zero three hundred hours)	3:00 p.m.	1500 (fifteen hundred hours)
4:00 a.m.	0400 (zero four hundred hours)	4:00 p.m.	1600 (sixteen hundred hours)
4:30 a.m.	0430 (zero four thirty hours)	4:30 p.m.	1630 (sixteen hundred thirty hours)
5:00 a.m.	0500 (zero five hundred hours)	5:00 p.m.	1700 (seventeen hundred hours)
6:00 a.m.	0600 (zero six hundred hours)	6:00 p.m.	1800 (eighteen hundred hours)
7:00 a.m.	0700 (zero seven hundred hours)	7:00 p.m.	1900 (nineteen hundred hours)
8:00 a.m.	0800 (zero eight hundred hours)	8:00 p.m.	2000 (twenty hundred hours)
9.00 a.m.	0900 (zero nine hundred hours)	9:00 p.m.	2100 (twenty-one hundred hours)
10:00 a.m.	1000 (ten hundred hours)	10:00 p.m.	2200 (twenty-two hundred hours)
11:00 a.m.	1100 (eleven hundred hours)	11:00 p.m.	2300 (twenty-three hundred hours)
12:00 p.m. (noon)	1200 (twelve hundred hours)	12:00 a.m. (midnight)	2400 (twenty-four hundred hours)

REGULATIONS AND LEGAL CONSIDERATIONS

Medical record documentation is created by physicians caring for the patient and by other authorized health care professionals involved with patient care. State, federal, and private accrediting agencies (e.g., JCAHO) provide specific guidelines that regulate how medical records are kept, including proper format for all forms, use of appropriate terminology and accepted abbreviations, protocol for personnel having access to records, and responsibilities for documentation.

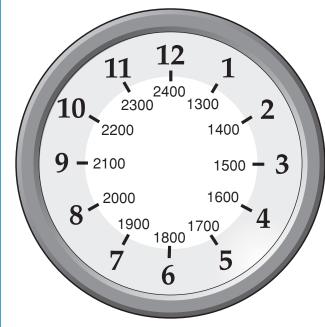


FIGURE 2-16 Military and standard time.

CORRECTIONS

Sometimes mistakes are made when making an entry in a medical record. Careful clarification of the error is essential. The format may vary according to specific facility or organizational guidelines. Generally, if a mistake is made in a handwritten entry, it should be identified by drawing a single line through it, then writing the correction in the margin above or immediately after the mistake. Include the date and the initials of the person making the correction. The use of correction fluid is forbidden!

The medical record often becomes evidence in medical malpractice cases. Obliterations and signs of possible tampering can be construed as trying to withhold information or covering up negligent wrongdoing. Complete and accurate record keeping is your best defense against any possible legal action (Fig. 2-17).

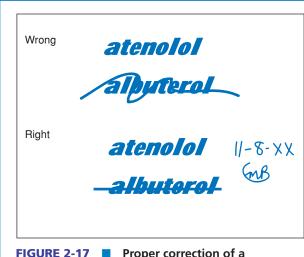


FIGURE 2-17 Proper correction of a handwritten chart entry.

CHAPTER 2 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
A	assessment
ā	before
a.c.	before meals
AD	right ear
ad lib.	as desired
a.m.	before noon
amt	amount
aq	water
AS	left ear
AU	both ears
A&W	alive and well
B	bilateral
b.i.d.	twice a day
BP	blood pressure
BRP	bathroom privileges
C	Celsius, centigrade
c	with
cap	capsule
CAT	computed axial tomography
CBC	complete blood count
CC	chief complaint
cc	cubic centimeter
CCU	coronary (cardiac) care unit
cm	centimeter
c/o	complains of
CP	chest pain
CT	computed tomography
cu mm or mm ³	cubic millimeter
d	day
DC or D/C	discharge; discontinue
dr	dram
Dx	diagnosis
ECU	emergency care unit
ER	emergency room
ЕТОН	ethyl alcohol

ABBREVIATION	EXPANSION
F	Fahrenheit
FH	family history
fl oz	fluid ounce
g or gm	gram
gr	grain
gt	drop
gtt	drops
h	hour
HEENT	head, eyes, ears, nose, and throat
H&P	history and physical
HPI	history of present illness
h.s.	hour of sleep (bedtime)
Ht	height
Hx	history
ICU	intensive care unit
ID	intradermal
IM	intramuscular
IMP	impression
IP	inpatient
IV	intravenous
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
kg	kilogram
L	liter
Ĺ	left
lb	pound
L&W	living and well
m	murmur
mg	milligram
mL or ml	milliliter
mm	millimeter
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
NAD	no acute distress
NKA	no known allergies
NKDA	no known drug allergies
noc.	night

ABBREVIATION	EXPANSION
NPO	nothing by mouth
0	objective information
OD	right eye
ОН	occupational history
OP	outpatient
OR	operating room
OS	left eye
OU	both eyes
oz	ounce
P	plan; pulse
\bar{p}	after
PACU	postanesthetic care unit
p.c.	after meals
PE	physical examination
per	by or through
PERRLA	pupils equal, round, and reactive to light and accommodation
PH	past history
PI	present illness
p.m.	after noon
PMH	past medical history
p.o.	by mouth
post-op or postop	postoperative (after surgery)
PR	through rectum
pre-op or preop	preoperative (before surgery)
p.r.n.	as needed
pt	patient
PV	through vagina
Px	physical
q	every
q.d.	every day
qh	every hour
q2h	every two hours
q.i.d.	four times a day
q.o.d.	every other day
qt	quart
R	respiration

ABBREVIATION	EXPANSION
R	right
R/O	rule out
ROS	review of systems
RRR	regular rate and rhythm
RTC	return to clinic
RTO	return to office
Rx	recipe; prescription
S	subjective information
s	without
SC, SQ, or sub-Q	subcutaneous
SH	social history
Sig	label; instruction to the patient
SOB	shortness of breath
SR	systems review
ss	one-half
STAT	immediately
suppos	suppository
Sx	symptom
T	temperature
tab	tablet
t.i.d.	three times a day
Tr	treatment
Tx	treatment; traction
UA	urinalysis
UCHD	usual childhood diseases
US or U/S	ultrasound (sonography)
VS	vital signs
wa	while awake
WDWN	well-developed and well-nourished
wk	week
WNL	within normal limits
Wt	weight
X	times or for
x-ray	radiology
y/o or y.o.	year old
yr	year

ABBREVIATION	EXPANSION
φ	none or negative
ρ	standing
2	sitting
0-	lying
İ	one
ίi	two
iii	three
iv	four
I, II, III, IV, V, VI, VII, VIII, IX, X	uppercase Roman numerals 1–10
<	less than
>	greater than
#	number; pound
9	female
ठै	male
0	degree; hour
\uparrow	increased
\	decreased

CHAPTER 2 SUMMARY OF DISEASE TERMS

The disease terms introduced in chapter 2 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acute/64 ă-kyūt'		exacerbation /64 ek-zas-ĕr-bā'shŭn
benign/64	4	febrile/64 feb'ril
chronic/6 kron'ik	54	idiopathic/64 id'ē-ō-path' ik
degenera dē-jen-ĕr-ā		localized/64 lō' kăl-īzd
degenera dē-jen'ĕr-ă	tive disease/64 -tiv di-zēz'	malaise/64 mă-lāz'
diagnosis		malignant/64 mă-lig'nănt
etiology/(ē-tē-ol'ŏ-jē		marked/64 markt'

morbidity/65 mōr-bid'i-tē mortality/65

mōr-tal'i-tē

noncontributory/65 non-kŏn-trĭ'byū-tōr-ē

prognosis/65 prog-nō'sis

progressive/65 prō-gres'iv

prophylaxis/65 prō-fi-lak'sis

recurrent/65 rē-kŭr'ĕnt

remission/64 rē-mish'ŭn

sign/65 sīn

sequela/65 sē-kwel'ă

symptom/65 simp' tŏm

syndrome/65 sin' drōm

systemic/64 sis-tem'ik

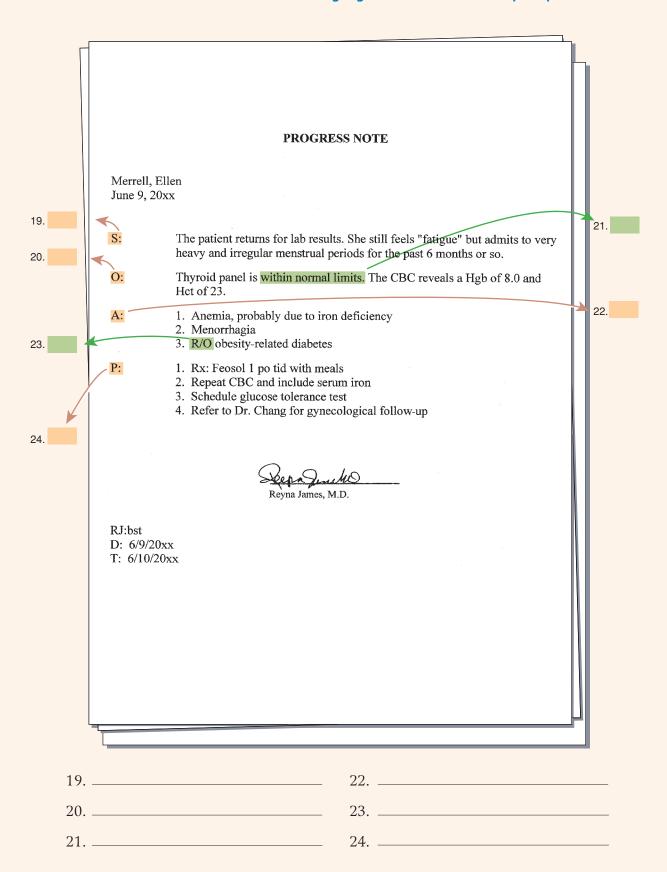
unremarkable/65 ŭn-rē-mark'ă-bel

PRACTICE EXERCISES

Write the abbreviation for each of the highlighted terms in the space provided below:

Н	ine dazievideo rei eden er die inginigried terms in die space provid		
1.	HISTORY AND PHYSICAL		
2.	HISTORY		
	Merrell, Ellen June 1, 20xx		
3.	CHIEF COMPLAINT: Fatigue		
4.	HISTORY OF PRESENT ILLNESS: The patient is a 49-year-old female who complains of feeling very tired for more than a month. She states that she falls asleep within 30 seconds of her head hitting the pillow at night.	13.	
5.	PAST MEDICAL HISTORY: The patient has had the usual childhood diseases. No		
6.	serious injuries or accidents. Allergies: No known drug allergies. Current Medications: Estrace, 0.2 mg q.d. FAMILY HISTORY: Both parents, in their 80's, are living and well.	15.	
7.	SOCIAL HISTORY: Occasional alcohol consumption. She is a nonsmoker. OCCUPATIONAL HISTORY: The patient is a retail clothing manager.	16.	
8.	REVIEW OF SYSTEMS: HEENT: Occasional sinus headache. CARDIOPULMONARY: Occasional palpitations. No chest pain, cough or shortness of breath. GASTROINTESTINAL:		
9.	Some increase in weight recently. GENITOURINARY: Recent pap smear and mammogram normal. MUSCULOSKELETAL: Negative. NEUROMUSCULAR: Negative.		
10.	PHYSICAL EXAMINATION		
	GENERAL APPEARANCE: A well-developed, obese female in no acute distress. VITAL SIGNS: Blood pressure 110/70, pulse 80, respirations 16, temperature 97 degrees F,	17.	
	height 62 inches, weight 206 pounds. <u>HEENT: Pupils equal, round and reactive to light and accommodation</u> . Tympanic membranes are normal. No sinus tenderness on percussion.	18.	
	Oropharynx: Clear. NECK: Supple; no masses or tenderness. No thyromegaly. LUNGS: Clear to percussion and auscultation. HEART: Rate: 80 and regular; normal		
	sinus rhythm; no murmurs or gallops. RECTOPELVIC: Deferred to gynecologist. EXTREMITIES: No clubbing, cyanosis, or edema. NEUROLOGICAL: Physiologic.		
	LABORATORY DATA: Chest x-ray, ECG, and pulmonary screen are unremarkable.		
11.	IMPRESSION: 1. FATIGUE		
	2. HYPOTHYROIDISM 3. OBESITY		
12.	PLAN/RECOMMENDATION/DISPOSITION: Draw blood today for CBC and thyroid		
	panel. The patient will return to the office in one week for test results.		
	SepaJensko		
	Reyna James, M.D.		
	RJ:bst D: 6/1/20xx		
	T: 6/2/20xx		
1	7 13		
2	8 14		
3	9 15		
4	10 16		
5	11 17		
6	12 18		

Write the term or abbreviation for each of the highlighted notations in the space provided below:



Write out the expanded term or meaning for each abbreviation: 26. OH _____ 28. BRP 29. PACU ____ 30. PH 31. D/C 32. Sig:____ 33. ER ___ 34. ICU 37. L&W 39. AU 40. Sx 41. VS 42. ROS 43. pt _____ 44. OD_____ 47. Dx _____ 48. HPI Match the following terms with their meanings: 49. febrile a. period in which symptoms stop b. probable outcome of a disease 50. syndrome 51. chronic c. name of a disease based on history, examination, and testing 52. remission d. elevated temperature 53. etiology e. set of symptoms characteristic of a particular disease or condition f. increase in severity with aggravation of symptoms 54. malignant 55. prognosis g. developing slowly over time 56. diagnosis h. limited to a definite area or part 57. exacerbation _____ i. cancerous 58. localized j. the study of the cause of a disease

90 MEDICAL TERMINOLOGY: A PRO	ogrammed learning appi	ROACH TO THE LANGUAGE OF HEALTH CARE		
Match each definition with its corresponding abbreviation or term:				
59. the route of oral medications	a.	preop		
60. place for surgery	b.	p.r.n.		
61. as desired	C.	parenteral		
62. progress note	d.	p.o.		
63. after surgery	e.	STAT		
64. pound	f.	ad lib.		
65. as needed	g.	postop		
66. by injection	h.	OR		
67. before surgery	i.	SOAP		
68. immediately	j.	#		
Write the meaning for the following	ng pharmaceutical phra	ases:		
69. VS q h ×4h, then q2h				
70. † p.o. q.i.d. p.c. h.s.				
71. aspirin (ASA) gr ii ss				
72. 650 mg p.o. q4h p.r.n. temp >	>101°			
73. i suppos PR q noc. p.r.n.				
74. gt † OU t.i.d. ×7d				
75. cap ii p.o. STAT, then i p.o. q6h				
76. 15 mL p.o. q 6 h p.r.n. pain				
Write the standard pharmaceutical	l abbreviations for the	following:		
77. one suppository in the vagina				
78. two drops in left ear every 3 h	nours			
79. one capsule by mouth two times a day, morning and evening				
80. two by mouth immediately, th	80. two by mouth immediately, then one by mouth every 6 hours			
81. five hundred milligrams by m	outh four times a day t	For 10 days		
Give the meaning for the following commonly misinterpreted, and list	-	tions, identify why each abbreviation is each:		
Abbreviation Meanin				
82. q.d				

q.o.d.

OS

83. 84.

85.	AD			
86.	AU			
87.	>			
88.	D/C			
89.	СС			
Give	the military times	s for the following s	tandard times:	
	1 00			
91.	2.20 0 00			
	-			
	1.00 m m			
	7.00			
	4:50 p.m			
Mate	h the following c	hart entries with the	e corresponding health	record abbreviation:
	works as a securi		corresponding nearth	a. UCHD
	advised to lower s			b. HPI
			died, stroke	c. PE
				d. CC
				e. OH
	•			g. FH
				h. P
		y contracted childho	e e	i. A
	•	rt: regular rate and		j. NKA
	C	C		,
			ing modalities, identify rcling the correct choice	which use ionizing radiation :
106.	computed tomo	graphy	ionizing radiation	nonionizing radiation
107.	magnetic resona	ance imaging	ionizing radiation	nonionizing radiation
108.	radiography		ionizing radiation	nonionizing radiation
109.	radionuclide org	gan imaging	ionizing radiation	nonionizing radiation
110.	sonography		ionizing radiation	nonionizing radiation
Mato	h the following ir	maging modalities v	vith their descriptions:	
111.	computed tomog	raphy	a. standard x-ra	ays
112.	magnetic resonar	nce imaging	b. gamma rays	
113.	radiography		c. ultrasound v	vaves
114.	radionuclide orga	an imaging	d. radio waves	
115.	sonography		e. three-dimen	sional x-rays



MEDICAL RECORD ANALYSIS

Medical Record 2-1

PROGRESS NOTE

- CC: 37 y.o. δ \bar{c} diabetes c/o swelling of the (R) foot and calf $\times 3d$
- S: There is no Hx of trauma, pain, SOB, or cardiac Sx, smoker $\times 12$ yr, \overline{ss} pkg q.d., denies ETOH consumption Meds: parenteral insulin q.d. NKDA
- Pt is afebrile, BP 140/84, P 72, R 16, lungs are clear; abdomen is benign \$\bar{s}\$ organomegaly; 0: muscle tone and strength are WNL; there is swelling of the (R) calf but \$\bar{s}\$ erythema or tenderness
- Edema of (R) calf of unknown etiology A:
- P: Schedule STAT vascular sonogram of lower extremities; pt is to keep the leg elevated × ii d, then RTC for follow-up and test results on Thursday (or sooner if ↑ edema, SOB, or CP)

QUESTIONS ABOUT MEDICAL RECORD 2-1

- 1. What is the sex of the patient?
 - a. male
 - b. female
- 2. Where was the patient seen?
 - a. emergency room
 - b. outpatient office or clinic
 - c. inpatient hospital
 - d. not stated
- 3. What is the condition of the patient's abdomen?
 - a. shows signs of cancer
 - b. internal organs are enlarged
 - c. internal organs are not enlarged
 - d. muscle tone and strength are weak
- 4. How much does the patient smoke per day?
 - a. one package
 - b. two packages
 - c. half a package
 - d. none; patient quit smoking 12 years ago
- 5. How is the patient's insulin administered?
 - a. orally
 - b. transdermally
 - c. infusion through implant
 - d. by injection

- 6. What is the cause of the patient's complaint?
 - a. unknown
 - b. fever
 - c. shortness of breath
 - d. trauma
- 7. When should the sonogram be performed?
 - a. immediately
 - b. within 2 days
 - c. at the time of follow-up
 - d. only if symptoms persist
- 8. How long should the patient's leg be kept elevated?
 - a. 1 week
 - b. 2 weeks
 - c. 1 day
 - d. 2 days

Medical Record 2-2

POSTOP MEDS FOR LAPAROTOMY

- 1. Vicodin (hydrocodone and acetaminophen), † tab p.o. q3h p.r.n. mild pain, or †† tab p.o. q3h p.r.n. moderate pain
- 2. Demerol (meperidine), 100 mg IM q3h p.r.n. severe pain
- 3. Tylenol (acetaminophen), 650 mg p.o. q4h p.r.n. oral temp ↑ 100.4°F
- 4. Ambien (zolpidem), 10 mg p.o. h.s. p.r.n. sleep
- 5. Mylicon (simethicone), 80 mg, † tab, chewed and swallowed q.i.d.
- 6. Dulcolax (bisacodyl) suppos, † PR in a.m.

QUESTIONS ABOUT MEDICAL RECORD 2-2

- 1. How is the Demerol to be administered?
 - a. by mouth
 - b. within the vein
 - c. under the skin
 - d. within the muscle
- 2. What is the Sig: on the Mylicon?
 - a. one every other day
 - b. one twice a day
 - c. one three times a day
 - d. one four times a day
- 3. What is the Sig: on the Dulcolax?
 - a. one suppository in the rectum in the morning
 - b. one suppository taken orally before noon
 - c. two suppositories before breakfast
 - d. one suppository as needed in the morning
- 4. When should the Ambien be administered?
 - a. each night
 - b. at bedtime
 - c. as needed
 - d. every hour

- 5. What are the instructions for administering Vicodin in the case of moderate pain?
 - a. one tablet every three hours
 - b. three tablets every hour
 - c. two tablets every three hours
 - d. three tablets every three hours
- 6. How should Tylenol be administered?
 - a. one dose every four hours as needed
 - b. one dose every four hours only if patient has a temperature of 100.4°F or higher
 - c. one dose every four hours as long as the patient's temperature does not go over 100.4°F
 - d. one dose every hour up to four per day
- 7. Laparotomy refers to which of the following?
 - a. a puncture in the abdomen
 - b. excision of the stomach
 - c. a puncture of the stomach
 - d. an incision in the abdomen

Medical Record 2-3

FOR ADDITIONAL STUDY

Michael Marsi has had chronic health problems in the last 2 years and has been seeing Dr. Spaulding, his personal physician, regularly during recent months. Dr. Spaulding uses problemorientated medical records and writes a new SOAP progress note at each patient visit. Mr. Marsi has come to see Dr. Spaulding today because he feels worse than usual. Medical Record 2-3 is the progress note from today's appointment. Dr. Spaulding handwrote it herself during the patient's visit.

Read Medical Record 2-3 (page 96) for Michael Marsi, then write your answers to the following questions in the spaces provided.

QI	UESTIONS ABOUT MEDICAL RECORD 2-3
1.	How old is Mr. Marsi?
2.	Where was the treatment rendered?
3.	List the three elements of the patient's complaint.
	a
	b
	C
4.	In your own words, not using medical terminology, briefly summarize Mr. Marsi's history:
5.	Which of the following is not mentioned at all in this history?
	a. the prescription medication Mr. Marsi takes
	b. Mr. Marsi's smoking habit
	c. Mr. Marsi's activity level at work
	d. Mr. Marsi's consumption of alcohol
6.	Dr. Spaulding and Mr. Marsi talked at length about Mr. Marsi's symptoms and how they have changed recently, and then Dr. Spaulding examined Mr. Marsi. List three objective findings that she noted in this examination.
	a
	b
	C
7.	Dr. Spaulding's assessment is that Mr. Marsi has
	However, she also wants to make sure Mr. Marsi does not have

8.	Dr. Spaulding's treatment plan involves four areas. List the specific plan(s) for each of these.
	a. Diagnostic tests ordered:
	b. Instruct the patient to change his personal habits (and how):
	c. Drug prescribed (including how much and when):
	d. Future diagnostic check and/or action to take:
9.	When is Dr. Spaulding expecting to see Mr. Marsi again?

Medical Record 2-3

FOR ADDITIONAL STUDY

PROGRESS NOTES

Patient Name: Marsi, Michael

DATE	FINDINGS
2-3-XX	CC 514.0. 8 C/o dizziness x3wt and
	headaches 5-6 xTwk. Today he wate
	Enumbress in Wleg and hand
	5 Hx of 1 BPx 4y1s Smoker x 20 yrs - 1 pkg/day
	to CP & SOB, occipital headaches in a.m.
	moderate fat diet - 3 beers 9 noc.
	MEDS: DyAzide + daily NKOA
	0 00 111 /0" 111 10#
	O BP 150/100 (Darm & H+ 68" W+ 198#
	T98.7° P76 R15
	Heart RRR 5 m
	Lungs Clear
	HEENT-WNL
	A Husertensing (HTM)
	A Hypertension (HTN) R/o Congestive heart failure (CHF)
	P Chestx-ray (CXR) and electrocardiogram (ECG) today VETOH to T beer a noc. DC smoking
	VETOH to Theer a noc. DC smoking
	Kx: Vasotec (enalapril) 5 mg tabit p.o. daily
	Texercise to 3x wk for 20-30 minutes
	Stop if CP, SOB, or dizzy
	V fat and cholesterd in diet
	recheck BPintwk
	RTO sooner if CP, SOB ordizzy
	12 900 11. 1110
	JR Spaulding M(1)

ANSWERS TO PRACTICE EXERCISES

1. H&P 2. Hx 3. CC 4. HPI 5. PMH 6. FH 7. SH 8. OH 9. ROS 10. PE 11. A, IMP, or Dx 12. P 13. c/o 14. UCHD 15. NKDA 16. L&W 17. NAD 18. PERRLA 19. subjective 20. objective 21. WNL 22. assessment (impression, diagnosis) 23. rule out 24. plan (disposition, recommendation) 25. chief complaint 26. occupational history 27. per rectum 28. bathroom privileges 29. postanesthetic care unit 30. past history 31. discontinue or discharge 32. instructions to patient 33. emergency room 34. intensive care unit 35. rule out 36. nothing by mouth 37. living and well 38. blood pressure 39. both ears 40. symptom 41. vital signs 42. review of systems 43. patient

44. right eye

47. diagnosis

45. history and physical

46. treatment or traction

48. history of present illness 49. d 50. e 51. g 52. a 53. j 54. i 55. b 56. c 57. f 58. h 59. d 60. h 61. f 62. i 63. g 64. j

65. b

66. c

67. a

- 68. e 69. vital signs every hour for 4 hours, then every 2 hours
- 70. one by mouth, four times a day, after meals and at bedtime
- 71. two and one-half grains of aspirin
- 72. 650 milligrams by mouth every 4 hours as needed for temperature greater than 101°F
- 73. one suppository through the rectum every night as needed
- 74. one drop in both eyes three times a day for 7 days
- 75. two capsules by mouth immediately, then one by mouth every 6 hours
- 76. fifteen milliliters by mouth every six hours as needed for pain
- 77. suppos † PV h.s. or † suppos PV h.s.
- 78. gtt ii AS q3h or ii gtt AS q3h

- 79. cap † p.o. b.i.d. a.m. and p.m. or † cap p.o. b.i.d. a.m. and p.m.
- 80. ii p.o. STAT, then i p.o. q6h
- 81. 500 mg p.o. q.i.d. x10d
- 82. every day, mistaken for q.i.d. (four times a day); spell out "every day" or "daily"
- 83. every other day, mistaken for q.d. (daily) or q.i.d. (four times a day); spell out "every other day"
- 84. left eye, mistaken for opposite eye or ears; spell out "left eye"
- 85. right ear, mistaken for opposite ear or eyes; spell out "right ear"
- 86. both ears, mistaken for both eyes or right or left ear/eye; spell out "both ears"
- 87. greater than, mistaken as less than; spell out "greater than"
- 88. discharge or discontinue, mistaken for each other; spell out either "discharge" or "discontinue"
- 89. cubic centimeter, mistaken as "units"; use metric equivalent "ml" or "mL"
- 90. 0100 hours
- 91. 1430 hours
- 92. 2400 hours
- 93. 1300 hours
- 94. 1900 hours
- 95. 1650 hours
- 96. e
- 97. h
- 98. g
- 99. f
- 100. i
- 101. d

102. b	107. nonionizing radiation	112. d
103. j	108. ionizing radiation	113. a
104. a	109. ionizing radiation	114. b
105. c	110. nonionizing radiation	115. c
106. ionizing radiation	111. e	

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 2-1: Progress Note

1. a 2. b 3. c 4. c 5. d 7. a 8. d 6. a

Medical Record 2-2: Postop Meds for Laparotomy

1. d 2. d 3. a 4. b 5. c 6. b 7. d

Medical Record 2-3: For Additional Study

See CD-ROM for answers.





CHAPTER

3

Integumentary System

✓ Chapter 3 Checklist	LOCATION
☐ Read Chapter 3: Integumentary System and complete all programmed review segments.	pages 99-128
$\hfill\Box$ Review the starter set of flash cards and term components related to Chapter 3.	back of book
☐ Complete the Chapter 3 Practice Exercises and Medical Record Analysis 3-1.	pages 133-140
☐ Complete Medical Record Analysis 3-2 For Additional Study.	pages 141-142
☐ Complete the Chapter 3 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 3 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 3 terms.	CD-ROM

INTEGUMENTARY SYSTEM OVERVIEW

The integumentary system (Fig. 3-1) consists of the following tissues:

- Skin (also called the integument)
- Hair
- Nails
- Sweat glands
- 🌞 Sebaceous glands

There are four functions of the integumentary system:

- Protects the body from injury
- Protects the body from intrusion of microorganisms
- 🌞 Helps to regulate body temperature
- Houses receptors for the sense of touch, including pain and sensation

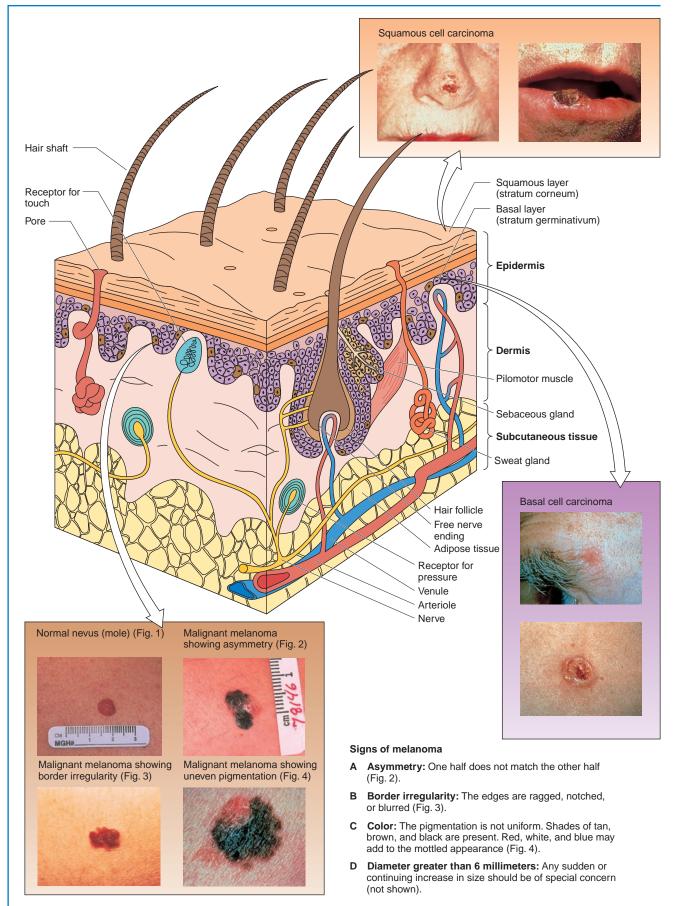


FIGURE 3-1 The skin.

- ***** The **epidermis** consists of several layers of stratified squamous (scale-like) epithelium.
 - 1. Cells are produced in the innermost (basal) layer, moving the older cells up toward the surface.
 - 2. Cells that are pushed up flatten, fill with a hard protein substance called **keratin**, and die.
 - 3. Layers of packed dead cells accumulate in the outermost (squamous) layer, where they are sloughed off.
- The **dermis**, which is the connective tissue layer, contains blood vessels, nerves, and other structures (*see* Fig. 3-1). Collagen fibers make the skin tough and elastic.
- The **subcutaneous layer** below the dermis is composed of loose connective tissue and adipose (fatty) tissue.



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
adip/o, lip/o, steat/o	fat
derm/o, dermat/o, cutane/o	skin
erythr/o	red
hidr/o	sweat
hist/o, histi/o	tissue
kerat/o	hard
leuk/o	white
melan/o	black
myc/o	fungus
onych/o	nail
plas/o	formation
purpur/o	purple
scler/o	hard
seb/o	sebum (oil)
squam/o	scale
trich/o	hair
xanth/o	yellow
xer/o	dry



Programmed Review: Combining Forms

ANSWERS	REVIEW
skin dermatology dermatologist skin under	3.1 Derm/o and dermat/o are Greek combining forms meaning The medical field specializing in the study of the skin is The physician who specializes in the study and treatment of the skin is called a Cutane/o is a Latin combining form meaning Subcutaneous therefore pertains to the skin.
tissue, histology production tissue	3.2 Recall that <i>cyt/o</i> means Cells with specialized functions combine to form varying types of tissue. <i>Hist/o</i> is a combining form meaning The study of tissues is called Histiogenic pertains to the origin or of
plas/o faulty condition of dysplasia	3.3 The combining form meaning formation is <i>Dys-</i> is a prefix meaning painful, difficult, or, and <i>-ia</i> refers to a Therefore, the term used to describe a condition of (faulty) abnormal development of tissue is
upon epi scale, pertaining to squamous	3.4 The prefix <i>epi-</i> , meaning, is used in naming the outer tissue layer of the skin, called thedermis. The combining form <i>squam/o</i> means The suffix <i>-ous</i> means The flat, scale-like cells of the epidermis are aptly called cells.
black darker cells	3.5 The pigment called melanin is found in the basal layer of the epidermis. The combining form <i>melan/o</i> means, and people with more melanin have skin. Melanocytes are the in the basal layer that produce melanin.
Kerat/o skin keratin	3.6 is the combining form that means hard. Keratin is the hard protein substance found in the basal layer of the Keratosis is a condition characterized by an overgrowth of cells having a large amount of
trich/o hair	3.7 Hair follicles are found in the dermis layer of the skin. The combining form for hair is Combined with the suffix meaning rupture, trichorrhexis is the term describing that is broken or split.

ANSWERS	REVIEW
sebum, seb/o sebum	3.8 Sebaceous glands, which open to the hair follicles in the skin, produce (oil). The combining form is Seborrhea refers to an overproduction of by these glands.
water sweat hidro	3.9 <i>Hydr/o</i> , a combining form meaning, stems from the Greek word hydros. A similar component, <i>hidr/o</i> , stemming from the Greek word hidros, means The formation of sweat is termedpoiesis.
fungus myc/o	3.10 Mycosis refers to any condition caused by a The term was coined using the combining form
nail, softening onycho fungus or fungal	3.11 The combining form <i>onych/o</i> refers to the fingernail or toe Recall that <i>-malacia</i> is a suffix meaning An abnormal softening of the nails is therefore calledmalacia. Onychomycosis refers to a infection (condition) of the nails.
lip/o fat adip/o sub fat, inflammation, fat	3.12 Several combining forms refer to body fat. The term lipid is from the combining form Liposuction therefore refers to the procedure for suctioning from body tissues. The adjective adipose, meaning fatty, is from the combining form Adipose tissue is found below the dermis in thecutaneous layer of the skin. A third combining form, steat/o, also refers to Steatitis refers to an of
white leuko	3.13 The combining form <i>leuk/o</i> means It is used to form the term for a partial or total absence of pigment in the skin, known asderma.
erythr/o red red skin	3.14 The combining form means red. Erythema therefore refers to skin that is Erythroderma is another term referring to
purple purple blood	3.15 The meaning of the combining form <i>purpur/o</i> is easy to remember, because it sounds like the color Purpuric lesions are because they result from hemorrhages, or the bursting forth of into the skin.
xanth/o yellow	3.16 The combining form refers to the color yellow. A xanthoma is a skin tumor.
skin xer/o, dry	3.17 Xeroderma is a term meaning dry The combining form for dry is Xerosis is a condition of pathologically skin.

Self-Instruction: Anatomic Terms

Study the following:

TERM	MEANING
epithelium ep-i-thē' lē-ŭm	cells covering external and internal surfaces of the body
epidermis ep-i-derm'is	thin outer layer of the skin
squamous cell layer skwā' mŭs sel lā'ĕr	flat, scale-like epithelial cells comprising the outermost epidermis
basal layer bā' săl lā'ĕr	deepest layer of epidermis
melanocyte mel'ă-nō-sīt	cell in the basal layer that gives color to the skin
melanin mel'ă-nin	dark brown to black pigment contained in melanocytes
dermis dĕr'mis	dense, fibrous connective tissue layer of the skin, also known as corium
sebaceous glands sē-bā'shŭs glanz	oil glands in the skin
sebum sē'bŭm	oily substance secreted by the sebaceous glands
sudoriferous glands sŭ-dō-rif'ĕr-ŭs glanz	sweat glands (sudor = sweat; ferre = to bear)
subcutaneous layer sŭb-kyū-tā' nē-ŭs lā' er	connective and adipose tissue layer just under the dermis
collagen kol'ă-jen	protein substance in skin and connective tissue (<i>koila</i> = glue; <i>gen</i> = producing)
hair <i>hār</i>	outgrowth of the skin composed of keratin
nail nāl	outgrowth of the skin, composed of keratin, at the end of each finger and toe
keratin ker'ă-tin	hard protein material found in the epidermis, hair, and nails

Programmed Review: Anatomic Terms

ANSWERS	REVIEW
	3.18 The name for the cells covering the external and internal
epithelium	surfaces of the body is the Recall that the prefix
upon, -ium	epi- means, and that the suffix means structure
	or tissue.

ANSWERS	REVIEW
epidermis, epi- skin dermis	3.19 The thin, outer cellular layer of the skin is called the, which is formed from the prefix and the combining form derm/o, meaning The middle layer of skin is called the and is where nerves and blood vessels are located.
squamous scale	3.20 The cell layer is the outermost layer of the epidermis. The combining form <i>squam/o</i> means, and this layer is so named because the dead skin cells in the outermost layer scale off.
basal pertaining to epidermis	3.21 Below the squamous cell layer is the cell layer. Recall that the suffix -al means This layer is therefore the deepest (or base) layer of the
cyt/o melanin black	3.22 Recall that the combining form for cell is A melanocyte therefore is a cell containing, the dark pigment of the skin. <i>Melan/o</i> means
sebum adjective dermis	3.23 The sebaceous glands produce, an oily substance. The suffix <i>-ous</i> is added to a combining form to create an These glands are located in the skin layer called the
sudoriferous dermis	3.24 The sweat glands are called the glands, from <i>sudor</i> (sweat) and <i>ferre</i> (to bear). They are located in the skin layer called the
subcutaneous sub- skin	3.25 Beneath the dermis is the layer. The prefix means below or under, and the combining form cutane/o means
collagen	3.26 Formed from the roots <i>koila</i> (glue) and <i>gen</i> (producing), is a protein substance found in skin and connective tissue.
keratin nails hard	3.27 Hair is an outgrowth of the skin composed of The on the fingers and toes also are composed of keratin. The combining form <i>kerat/o</i> means

Self-Instruction: Symptomatic Terms (Primary and Secondary Lesions)

Study the following:

TERM	MEANING
lesion (Fig. 3-2) lē'zhŭn	an area of pathologically altered tissue; the two types of lesions are primary and secondary

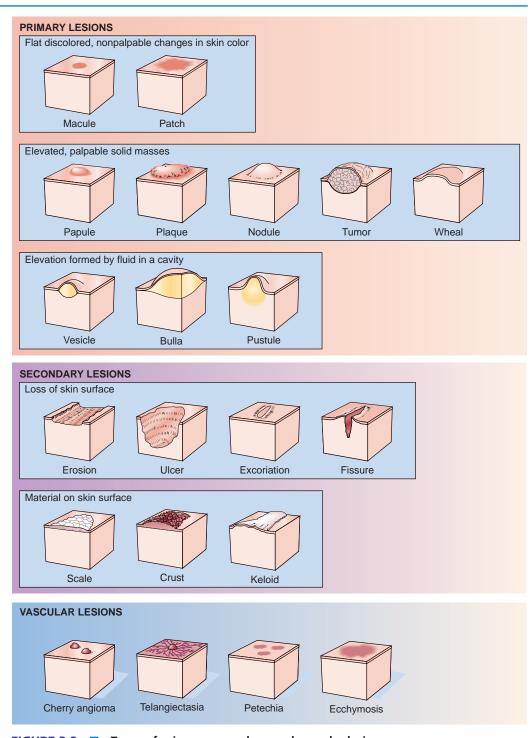
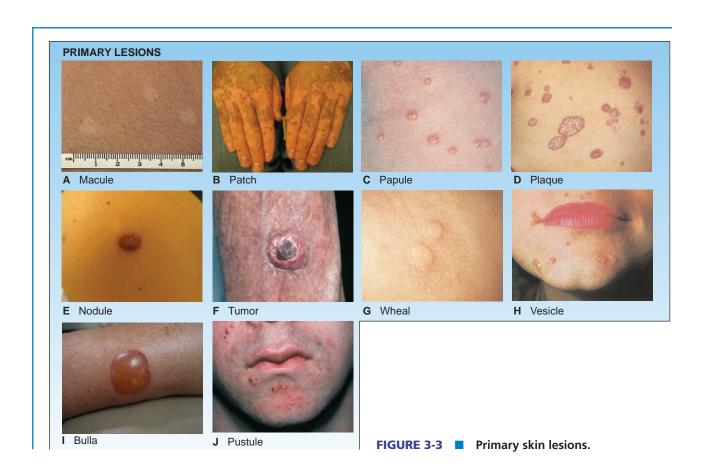
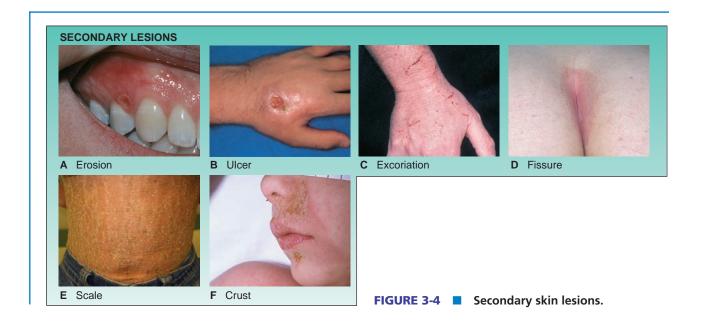


FIGURE 3-2 Types of primary, secondary, and vascular lesions.

TERM	MEANING	
PRIMARY LESIONS		
primary lesions prī'mār-ē lē'zhŭnz	lesions arising from previously normal skin	
Flat, Nonpalpable Changes in Skin Color		
macule or macula (Fig. 3-3, A) mak'yūl	a flat, discolored spot on the skin up to 1 cm across (e.g., a freckle)	
patch (Fig. 3-3, B) pach	a flat, discolored area on the skin larger than 1 cm (e.g., vitiligo)	
Elevated, Palpable Solid Masses		
papule (Fig. 3-3, C) pap'yūl	a solid mass on the skin up to 0.5 cm in diameter (e.g., a nevus [mole])	
plaque (Fig. 3-3, D) plak	a solid mass greater than 1 cm in diameter and limited to the surface of the skin	
nodule (Fig. 3-3, E) nod'yūl	a solid mass greater than 1 cm that extends deeper into the epidermis	
tumor (Fig. 3-3, F) tū'mŏr	a solid mass larger than 1–2 cm	



TERM	MEANING	
wheal (Fig. 3-3, G) wēl	an area of localized skin edema (swelling) (e.g., a hive)	
Elevations Formed by Fluid	Within a Cavity	
vesicle (Fig. 3-3, H) ves' ĭ-kĕl	little bladder; an elevated, fluid-filled sac (blister) within or under the epidermis up to 0.5 cm in diameter (e.g., a fever blister)	
bulla (Fig. 3-3, I) bul'ă	a blister larger than 0.5 cm (e.g., a second-degree burn) (bulla = bubble)	
pustule (Fig. 3-3, J) pŭs' tyūl	a pus-filled sac (e.g., a pimple)	
SECONDARY LESIONS		
secondary lesions sek'ŏn-dār-ē lē'zhŭnz	lesions that result in changes in primary lesions	
Loss of Skin Surface		
erosion (Fig. 3-4, A) ē-rō'zhŭn	gnawed away; loss of superficial epidermis, leaving an area of moisture but no bleeding (e.g., area of moisture after rupture of a vesicle)	
ulcer (Fig. 3-4, B) ŭl'sĕr	an open sore on the skin or mucous membrane that can bleed and scar; sometimes accompanied by infection (e.g., decubitus ulcer)	
excoriation (Fig. 3-4, C) eks-kō'rē-ā'shйn	a scratch mark	
fissure (Fig. 3-4, D) fish'ŭr	a linear crack in the skin	



TERM	MEANING		
Material on Skin Surface			
scale (Fig. 3-4, E) skāl	a thin flake of exfoliated epidermis (e.g., dandruff)		
crust (Fig. 3-4, F) krŭst	a dried residue of serum (body liquid), pus, or blood on the skin (e.g., as seen in impetigo)		
VASCULAR LESIONS	VASCULAR LESIONS		
vascular lesions vas' kyūl-lǎr lē' zhŭnz	lesions of a blood vessel		
cherry angioma (Fig. 3-5, A) chār'ē an-jē-ō'mă	a small, round, bright red blood vessel tumor on the skin, often on the trunk of the elderly		
telangiectasia (Fig. 3-5, B) tel-an'jē-ek-tā'zē-ă spider angioma spī'dĕr an-jē-ō'mă	a tiny, red blood vessel lesion formed by the dilation of a group of blood vessels radiating from a central arteriole, most commonly on the face, neck, or chest (<i>telos</i> = end)		
PURPURIC LESIONS			
purpuric lesions pŭr-pū' rik lē' zhŭnz	purpura; lesions resulting from hemorrhages into the skin		
petechia (Fig. 3-5, C) pe-tē' kē-ă	spot; reddish-brown, minute hemorrhagic spots on the skin that indicate a bleeding tendency; a small purpura		
ecchymosis (Fig. 3-5, D) ek-i-mō'sis	bruise; a black and blue mark; a large purpura (chymo = juice)		
SCAR FORMATIONS			
cicatrix of the skin sik'ă-triks	a mark left by the healing of a sore or wound, showing the replacement of destroyed tissue by fibrous tissue (<i>cicatrix</i> = scar)		
keloid (Fig. 3-6) <i>kē' loyd</i>	an abnormal overgrowth of scar tissue that is thick and irregular (<i>kele</i> = tumor)		

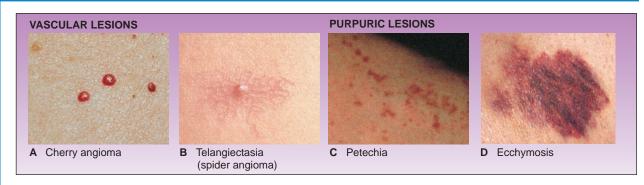


FIGURE 3-5 Vascular and purpuric skin lesions.







FIGURE 3-7 Verrucae on a knee.

TERM	MEANING
EPIDERMAL TUMORS	
epidermal tumors ep-i-dĕr'măl tū'mŏrz	skin tumors arising from the epidermis
nevus (see Fig. 3-1) nē'vŭs	a congenital malformation on the skin that can be epidermal or vascular; also called a mole
dysplastic nevus dis-plas' tik nē' vŭs	a mole with precancerous changes
verruca (Fig. 3-7) vĕ-rū'kă	an epidermal tumor caused by a papilloma virus, also called a wart

Programmed Review: Symptomatic Terms (Primary and Secondary Lesions)

ANSWERS	REVIEW
lesion	3.28 A is an area of pathologically altered tissue.
secondary	There are primary and types. Lesions that arise
primary	from previously normal skin are called lesions,
	whereas those that result in changes in primary lesions are called
secondary	lesions.
macule or macula	3.29 A freckle is an example of a, which is a flat,
	discolored spot on the skin up to 1 cm across. A larger, flat, discolored
patch, maculae	spot is called a The plural of macula is
solid	3.30 A papule is a mass on the skin up to 0.5 cm in
plaque	diameter, such as a mole. A is like a papule but is

ANSWERS	REVIEW
Purpuric	3.37 lesions look purple because of hemorrhages
purple	into the skin. The combining form purpur/o means
	A small purpura appearing as a tiny, reddish-brown spot on the skin
petechia, iae	is called a The plural form is petech A bruise is
ecchymosis, es	called an; the plural form is ecchymos
	3.38 Epidermal tumors are skin tumors arising from the
epidermis, nevus	A mole is called a A dysplastic nevus
mole	is a with precancerous changes. The prefix <i>dys-</i>
painful, difficult, or faulty	means A verruca is an epidermal
tumor, wart	caused by a papilloma virus and is also called a
verrucae	The plural of verruca is

Self-Instruction: General Symptomatic Terms

Study the following:

TERM	MEANING
alopecia al-ō-pē' shē-ă	baldness; natural or unnatural deficiency of hair
comedo (pl. comedos, comedones) (Fig. 3-8) kom'ē-dō	a plug of sebum (oil) within the opening of a hair follicle
closed comedo klōsd kom'ē-dō	a comedo below the skin surface, with a white center (whitehead)
open comedo ō' pĕn kom'ē-dō	a comedo open to the skin surface, with a black center caused by the presence of melanin exposed to air (blackhead)
eruption ē-rŭp'shŭn	appearance of a skin lesion
erythema er-i-thē'mă	redness of skin



FIGURE 3-8 Open and closed comedones.

TERM	MEANING
pruritus prū-rī'tŭs	severe itching
rash răsh	a general term for skin eruption, most often associated with communicable disease
skin pigmentation skin pig-men-tā'shŭn	skin color resulting from the presence of melanin
depigmentation dē-pig-men-tā'shŭn	loss of melanin pigment in the skin
hypopigmentation hī' pō-pig-men-tā'shŭn	areas of skin lacking color because of deficient amounts of melanin
hyperpigmentation hī' pĕr-pig-men-tā'shŭn	darkened areas of skin caused by excessive amounts of melanin
suppuration sŭp'yŭ-rā'shŭn	production of purulent matter (pus)
urticaria (see Fig. 3-3, G) ŭr'ti-kar'i-ă	hives; an eruption of wheals on the skin accompanied by itching (<i>urtica</i> = stinging nettle)
xeroderma zēr'ō-dĕr'mă	dry skin

Programmed Review: General Symptomatic Terms

ANSWERS	REVIEW
alopecia	3.39 Baldness, or a deficiency of hair, is called
	3.40 A plug of sebum (oil) within the opening of a hair follicle is
comedo	called a The plural form is comedos or
comedones	A comedo below the skin surface with a white center
whitehead	is called a closed comedo or A comedo open to the
	skin surface with center caused by the presence of melanin exposed
blackhead	to air is called a black
lesion	3.41 An eruption is the appearance of a skin A
rash	is a general term for a skin eruption, often associated with
	a communicable disease. An eruption of wheals on the skin (hives)
urticaria	accompanied by itching is called Remember that the
condition of	suffix -ia means a
pruritus	3.42 Any severe itching is called Using the
	adjective form of pruritus, a pruritic eruption is one that is marked
itching	by severe

ANSWERS	REVIEW
erthry/o erythema	3.43 The combining form for red is Redness of the skin is called The adjective erythematous means
pertaining to	redness of the skin.
black	3.44 <i>Melan/o</i> is the combining form meaning Melanin is
color	the pigment that gives to the skin. Pigmentation describes the process of skin coloration. Recall the meaning of the following
not	prefixes: de- means from, down, or; hypo- means below or
deficient, excessive	; and <i>hyper-</i> means above or Each is
	used to describe a different pigmentation of the skin. Using the prefix
	meaning from, down, or not, the total loss or absence of melanin is
de	calledpigmentation. Too little or deficient melanin causes
hypo	pigmentation, and too much or excessive deposits of melanin
hyper	causepigmentation.
xer/o	3.45 The combining form meaning dry is The Greek
skin	word derma means Therefore, the term for dry skin is
xeroderma	·



Self-Instruction: Diagnostic Terms

Study the following:

TERM	MEANING
acne (Fig. 3-9) ak'nē	inflammation of the sebaceous glands and hair follicles of the skin, evidenced by comedones (blackheads), pustules, or nodules on the skin (<i>acne</i> = point)
albinism al'bi-nizm	a hereditary condition characterized by a partial or total lack of melanin pigment (particularly in the eyes, skin, and hair)
burn bĕrn	injury to body tissue caused by heat, chemicals, electricity, radiation, or gases
first-degree (or 1 st -degree) burn first-dĕ-grē' bĕrn	a burn involving only the epidermis; characterized by erythema (redness) and hyperesthesia (excessive sensation)
second-degree (or 2 nd -degree) burn sek'ŭnd-dĕ-grē' bĕrn	a burn involving the epidermis and the dermis; characterized by erythema, hyperesthesia, and vesications (blisters)
third-degree (or 3 rd -degree) burn thĭrd-dĕ-grē' bĕrn	a burn involving all layers of the skin; characterized by the destruction of the epidermis and dermis, with damage or destruction of subcutaneous tissue



FIGURE 3-9 Acne lesions. Inflammatory papules, pustules, and closed comedones are present on the face of a patient diagnosed with acne vulgaris.



FIGURE 3-10 Actinic (solar) keratoses.

TERM	MEANING
dermatitis dĕr-mă-tī'tis	inflammation of the skin characterized by erythema, pruritus (itching), and various lesions
dermatosis děr-mă-tō'sis	any disorder of the skin
exanthematous viral disease ek-zan-them'ă-t ŭs vī' răl di-zēz'	an eruption of the skin caused by a viral disease (exanthema = eruption)
rubella rū-bel'ă	reddish; German measles
rubeola rū-bē'ō-lă	reddish; 14-day measles
varicella var-i-sel'ă	a tiny spot; chickenpox
eczema ek'zĕ-mă	to boil out; often used interchangeably with dermatitis to denote a skin condition characterized by the appearance of inflamed, swollen papules and vesicles that crust and scale, often with sensations of itching and burning
furuncle fū'rŭng-kel	boil; a painful nodule formed in the skin by inflammation originating in a hair follicle; caused by staphylococcosis
carbuncle kar' bŭng-kel	a skin infection consisting of clusters of furuncles (<i>carbo</i> = small, glowing embers)
abscess ab'ses	a localized collection of pus in a cavity formed by the inflammation of surrounding tissues, which heals when drained or excised (<i>abscessus</i> = a going away)
gangrene gang'grēn	an eating sore; death of tissue associated with loss of blood supply
herpes simplex virus type 1 (HSV-1) hĕr'pēz sim'pleks vī'nĭs	transient viral vesicles (e.g., cold sores or fever blisters) that infect the facial area, especially the mouth and nose (<i>herpes</i> = creeping skin disease)

TERM	MEANING
herpes simplex virus type 2 (HSV-2) (see Fig. 15-8) hĕr'pēz sim'pleks vī'rǔs	sexually transmitted, ulcer-like lesions of the genital and anorectal skin and mucosa; after initial infection, the virus lies dormant in the nerve cell root and may recur at times of stress
herpes zoster hĕr'pēz zos'tĕr	a viral disease affecting the peripheral nerves characterized by painful blisters that spread over the skin following affected nerves, usually unilateral; also known as shingles (<i>zoster</i> = girdle)
impetigo im-pe-tī'gō	a highly contagious, bacterial skin inflammation marked by pustules that rupture and become crusted, most often around the mouth and nostrils
keratoses ker-ă-tō' sēz	thickened areas of epidermis
actinic (or solar) keratoses (Fig. 3-10) ak-tin' ik (sō' lăr) ker-ă-tō' sēz	localized thickening of the skin caused by excessive exposure to sunlight, a known precursor to cancer (actinic = ray; solar = sun)
seborrheic keratoses (Fig. 3-11) seb-ō-rē' ik ker-ă-tō'sēz	benign, wart-like tumors; more common on elderly skin
lupus lū'pŭs	a chronic autoimmune disease characterized by inflammation of various parts of the body (<i>lupus</i> = wolf)
cutaneous lupus kyū-tā' nē-ŭs lū' pŭs	limited to the skin; evidenced by a characteristic rash, especially on the face, neck, and scalp
systemic lupus erythematosus (SLE) sis-tem' ĭk lū' pŭs ĕr-i- thē' mă-tō' sŭs	a more severe form of lupus involving the skin, joints, and often vital organs (e.g., lungs or kidneys)
malignant cutaneous neoplasm mĕ-lig' nănt kyū-tā' nē-ŭs nē' ō-plazm	skin cancer
squamous cell carcinoma (SCC) (see Fig. 3-1) skwā' mŭs sel kar-si-nō' mă	malignant tumor of the squamous epithelium



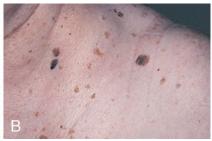


FIGURE 3-11 Seborrheic keratoses. A. Lesion with a warty, stuck-on appearance. B. Multiple lesions showing various colors and sizes.



FIGURE 3-12 Lesions of the AIDS-related Kaposi sarcoma.

TERM	MEANING
basal cell carcinoma (BCC) (see Fig. 3-1) bā' săl sel kar-si-nō' mă	malignant tumor of the basal layer of the epidermis; the most common type of skin cancer
malignant melanoma (see Fig. 3-1) mă-lig'nănt mel'ă-nō' mă	malignant tumor composed of melanocytes
Kaposi sarcoma (Fig. 3-12) kă-pō' sē sar-cō' mă	malignant tumor of the walls of blood vessels, appearing as painless, dark bluish-purple plaques on the skin; often spreads to the lymph nodes and internal organs; commonly seen in patients with HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome)
onychia ō-nik'ē-ă	inflammation of the fingernail or toenail
paronychia (Fig. 3-13) par-ō-nik'ē-ă	inflammation of the nail fold
pediculosis (Fig. 3-14) pĕ-dik'yū-lō'sis	infestation with lice that causes itching and dermatitis (pediculo = louse)
pediculosis capitis pĕ-dik'yū-lō'sis kap'i-tis	head lice (capitis = head)



FIGURE 3-13 Chronic paronychia.

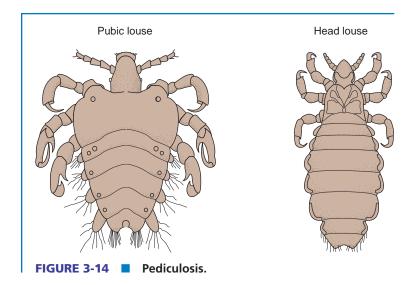




FIGURE 3-15 Psoriasis lesions on arm and elbow.

TERM	MEANING
pediculosis pubis pĕ-dik' yū-lō' sis pyū' bis	lice that generally infect the pubic region and sometimes also hair of the axilla, eyebrows, eyelashes, beard, or other hairy body surfaces; also called crabs (<i>pubis</i> = groin)
psoriasis (Fig. 3-15) sō-rī'ă-sis	itching; a chronic, recurrent skin disease marked by silvery scales covering red patches, papules, and/or plaques on the skin that result from overproduction and thickening of skin cells; common sites of involvement are the elbows, knees, genitals, arms, legs, scalp, and nails
scabies skā'bēz	a contagious disease caused by a parasite (mite) that invades the skin, causing an intense itch, most often at articulations between the fingers or toes, elbow, etc. (<i>scabo</i> = to scratch)
seb-ō-rē'ă	a skin condition marked by the hypersecretion of sebum from the sebaceous glands
tinea tin'ē-ă	a group of fungal skin diseases identified by the body part affected, including tinea corporis (body), commonly called ringworm, and tinea pedis (foot), also called athlete's foot
vitiligo (see Fig. 3-3, B) vit-i-lī'gō	a condition caused by the destruction of melanin that results in the appearance of white patches on the skin (commonly the face, hands, legs, and genital areas)



Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
condition	3.46 The suffix <i>-osis</i> refers to an increase or
skin	Dermat/o means Therefore, the general term meaning skin
dermatosis	condition is The suffix meaning inflammation is

ANSWERS	REVIEW
vesicles or blisters genital or anorectal Herpes vesicles or blisters	, such as cold sores or fever blisters. Type 2 is sexually transmitted and causes lesions in skin zoster affects the peripheral nerves and is characterized by painful that spread over the skin.
Impetigo scabies fungus pediculosis, capitis pubis	is a highly contagious, bacterial skin inflammation usually occurring around the mouth and nose. Another contagious skin disease, called, is caused by a mite that invades the skin and causes intense itching. Tinea is a different group of contagious skin diseases caused by a Lice also can cause an infestation on the skin, called Head lice are called pediculosis, and lice infesting the pubic region are called pediculosis
hard condition of keratosis keratoses actinic sun, seborrheic	3.56 Putting the combining form <i>kerat/o</i> , meaning, with the suffix <i>-osis</i> , meaning a, makes the word, a condition of thickened epidermis. The plural form of this term is Solar keratoses, or keratoses, are caused by excessive exposure to the Benign, wart-like tumors are called keratoses.
lupus skin systemic erythematosus	 3.57 An autoimmune disease involving inflammation of various parts of the body was named after the Latin word for wolf, Cutaneous lupus is limited to the and causes a characteristic rash. A more serious form, called lupus (SLE), affects many body organs.
condition of fingernail or toenail, alongside of paronychia	3.58 In the term onychia, the suffix -ia (meaning inflammation), is joined with onych/o (meaning a). The suffix para-, meaning, combined with onych/o and the suffix -ia form the term denoting a condition of inflammation of the nail fold, or (Remember the rules of spelling: drop the final vowel from the prefix before joining it to a combining form that begins with a vowel.)
discharge seborrhea	3.59 Recall that the suffix <i>-rrhea</i> means A skin condition marked by the hypersecretion and discharge of sebum is called

ANSWERS	REVIEW
	3.60 A condition in which the skin has silvery scales covering red
psoriasis	patches, papules, and/or plaques is
new	3.61 Neoplasia is a term describing a condition of
malignant	formation of tissue that is either cancerous () or
benign	noncancerous (). Several different forms of malignant
squamous cell	neoplasia can involve the skin. A
	carcinoma is a tumor of the squamous epithelium. A malignant
basal cell	tumor of the basal layer of the epidermis is a
carcinoma	A tumor composed of melanocytes is a
melanoma	malignant Remember that the suffix -oma means
tumor, sarcoma	Kaposi is a tumor of the walls of blood
	vessels, commonly seen in patients with HIV/AIDS.

Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
biopsy (Bx) (Fig. 3-16) <i>bī'op-sē</i>	removal of a small piece of tissue for microscopic pathologic examination
excisional biopsy ek-sizh'ŭn-al bī'op-sē	removal of an entire lesion
incisional biopsy in-sizh'ŭn-ăl bī'op-sē	removal of a selected portion of a lesion
shave biopsy shāv bī'op-sē	a technique using a surgical blade to "shave" tissue from the epidermis and upper dermis



FIGURE 3-16 ■ Collection of biopsy specimen.

TEST OR PROCEDURE	EXPLANATION
culture and sensitivity (C&S) kŭl'chŭr and sen-si-tiv'i-tē	a technique of isolating and growing colonies of microorganisms to identify a pathogen and to determine which drugs might be effective for combating the infection it has caused
frozen section (FS) frō' zen sek'shŭn	a surgical technique that involves cutting a thin piece of tissue from a frozen specimen for immediate pathologic examination
skin tests skin testz	methods for determining the reaction of the body to a given substance by applying it to, or injecting it into, the skin; commonly used in treating allergies
scratch test skrach test	a test in which a substance is applied to the skin through a scratch
patch test pach test	a test in which a substance is applied topically to the skin on a small piece of blotting paper or wet cloth

Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
biopsy lesion out or away, incisional portion shave	3.62 In many different body systems, small samples of tissue are removed for a diagnostic test involving microscopic examination. This is called a
culture sensitivity	3.63 A technique for isolating and growing a colony of microorganisms to identify a pathogen is called a and (C&S). This helps to determine which drugs may be effective in fighting the infection.
frozen section FS	3.64 A tissue specimen may be frozen and cut thin for examination. This is called a and is abbreviated
scratch	3.65 Skin tests are commonly used to identify substances to which a person may be allergic. In the test, a small amount of the substance is applied to the skin through a scratch. Applying the substance topically to the skin with a small piece of paper or cloth is called a test.

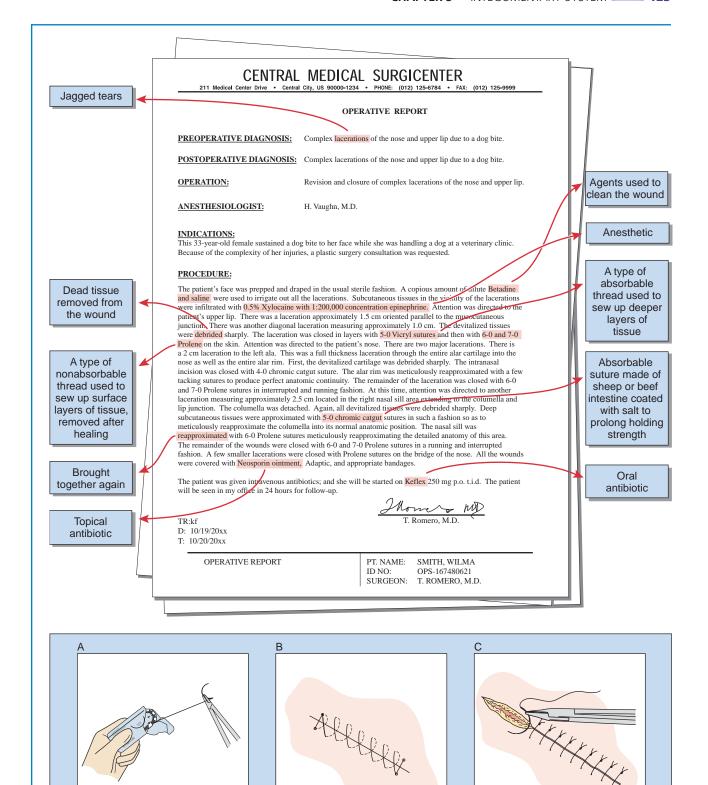


FIGURE 3-17 Typical documentation of a surgical procedure. Suturing is also depicted.

knotted at each end

Continuous sutures are several stitches

from a single length of suture material,

Interrupted sutures are groups of

individual stitches, each of which

is knotted

Removing suture from sterile

package with needle holder



Self-Instruction: Operative Terms (Fig. 3-17)

TERM	MEANING
chemosurgery kem'ō-s ŭr-jĕr-ē	removal of tissue after it has been destroyed by chemical means
chemical peel kĕm' i-kǎl pēl	a technique for restoring wrinkled, scarred, or blemished skin by applying an acid solution to "peel" away the top layers of the skin
cryosurgery krī-ō-sŭr'jĕr-ē	destruction of tissue by freezing with application of an extremely cold chemical (e.g., liquid nitrogen)
dermabrasion dĕr-mă-brā' zhŭn	surgical removal of epidermis frozen by aerosol spray using wire brushes and emery papers to remove scars, tattoos, and/or wrinkles
debridement dā-brēd-mon'	removal of dead tissue from a wound or burn site to promote healing and to prevent infection
curettage kyū-rĕ-tahzh'	cleaning; scraping a wound using a spoon-like cutting instrument called a curette; used for debridement
electrosurgical procedures ē-lek-trō-sŭr'ji-căl prō-cē'jŭrz	use of electric current to destroy tissue; the type and strength of the current and method of application vary
electrocautery (Fig. 3-18) ē-lek' trō-kaw'těr-ē	use of an instrument heated by electric current (cautery) to coagulate bleeding areas by burning the tissue (e.g., to sear a blood vessel)
electrodesiccation ē-lek' trō-des-i-kā' shŭn	use of high-frequency electric currents to destroy tissue by drying it; the active electrode makes direct contact with the skin lesion (<i>desiccate</i> = to dry up)
fulguration ful-gŭ-rā'shŭn	to lighten; use of long, high-frequency, electric sparks to destroy tissue; the active electrode does <i>not</i> touch the skin
incision and drainage (I&D) in-sizh'ŭn and drān'ăj	incision and drainage of an infected skin lesion (e.g., an abscess)



hemostasis during a surgical procedure.

lā'zĕrradiation; an instrument that concentrates high frequencies of light into a small, extremely intense beam that is precise in depth and diameter; applied to body tissues to destroy lesions or for dissection (cutting of parts for study)laser surgerysurgery using a laser in various dermatologic procedures to remove lesions, scars, tattoos, etc.Mohs surgerya technique used to excise tumors of the skin by removing fresh tissue, layer by layer, until a tumor-free plane is reached skin graft' ingskin graftingtransfer of skin from one body site to another to replace skin that has been lost through a burn or injuryautograftgraft transfer to a new position in the body of the same person (auto = self)heterograft or xenograftgraft transfer between different species, such as from animal					
lā'zĕr	in depth and diameter; applied to body tissues to destroy lesions or for dissection (cutting of parts for study)				
	a technique used to excise tumors of the skin by removing fresh tissue, layer by layer, until a tumor-free plane is reached				
heterograft or xenograft het'er-ō-graft, zen'ō-graft	graft transfer between different species, such as from animal to human (<i>hetero</i> = different; <i>xeno</i> = strange)				
homograft or allograft hō'mō-graft, al'ō-graft	donor transfer between persons of the same species, such as human to human (<i>homo</i> = same)				



Programmed Review: Operative Terms

ANSWERS	REVIEW
chemical peel	3.66 A special form of chemosurgery, called a, uses an acid to peel away the top layers of skin.
freezing	3.67 Cryosurgery destroys tissue by it, usually with an extremely cold chemical, such as liquid nitrogen.
dermabrasion	3.68 Another way to remove skin tissue, particularly scars, tattoos, or wrinkles, is to surgically scrape off the skin using a wire brush or emery paper. This is called
from, down, or not debridement curettage	 3.69 Recall that the prefix <i>de-</i> means When dead tissue is removed from a wound or burn site, this is called This is often done with a cutting instrument called a curette, and the technique is thus called
electrosurgery	 3.70 Electricity is used in many dermatologic procedures to destroy unwanted tissue. The general term for such operative procedures is The use of an electrically heated instrument to coagulate a bleeding area by burning the tissue is called
electrocautery	Electrodesiccation, in contrast, applies an

1

Self-Instruction: Therapeutic Terms

TERM	MEANING
chemotherapy kēm'ō-thār'ă-pē	treatment of malignancies, infections, and other diseases with chemical agents that destroy selected cells or impair their ability to reproduce
radiation therapy rā'dē-ā'shŭn thār'ā-pē	treatment of neoplastic disease using ionizing radiation to deter the proliferation of malignant cells
sclerotherapy sklēr'ō-thār'ă-pē	use of sclerosing agents in treating diseases (e.g., injection of a saline solution into a dilated blood vessel tumor in the skin, resulting in hardening of the tissue within and eventual sloughing away of the lesion)
ultraviolet therapy ŭl-tră-vī'ō-let thār'ă-pē	use of ultraviolet light to promote healing of a skin lesion (e.g., an ulcer)

TERM	MEANING				
COMMON THERAPEUTIC	DRUG CLASSIFICATIONS				
anesthetic an-es-thet'ik	a drug that temporarily blocks transmission of nerve conduction to produce a loss of sensations (e.g., pain)				
antibiotic an'tē-bī-ot'ik	ORUG CLASSIFICATIONS a drug that temporarily blocks transmission of nerve				
antifungal an'tē-fŭng'găl	a drug that kills or prevents the growth of fungi				
antihistamine an-tē-his'tă-mēn	a drug that blocks the effects of histamine in the body				
histamine his'tă-mēn	reactions, causing swelling and inflammation of tissues (e.g.,				
antiinflammatory an'tē-in-flam'ă-tō'rē	a drug that reduces inflammation				
antipruritic an'tē-prū-rit'ik	a drug that relieves itching				
antiseptic an-ti-sep'tik	an agent that inhibits the growth of infectious microorganisms				



Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
	3.75 Several different types of therapy are used to treat
	tumors and other skin lesions. The use of chemical agents as
chemotherapy	a treatment is called Ionizing
radiation	is also used on tumors, and this is called radiation
therapy	In another form of therapy, sclerosing agents are
	injected into a lesion to harden the tissue within; this is called
sclerotherapy	Finally, ultraviolet therapy is the use of
light	ultraviolet to promote healing of a skin lesion
	(e.g., an ulcer).
anesthetic	3.76 An agent (using the suffix -tic, which means
	pertaining to) produces a loss of sensation so that the person
	undergoing a procedure does not feel pain.

CHAPTER 3 ACRONYMS AND ABBREVIATIONS

called an _

antiinflammatory

ABBREVIATION	EXPANSION
AIDS	acquired immunodeficiency syndrome
BCC	basal cell carcinoma
Bx	biopsy
C&S	culture and sensitivity
FS	frozen section
HIV	human immunodeficiency virus
HSV-1	herpes simplex virus type 1
HSV-2	herpes simplex virus type 2
I&D	incision and drainage
SCC	squamous cell carcinoma
SLE	systemic lupus erythematosus

CHAPTER 3 SUMMARY OF TERMS

The terms introduced in chapter 3 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

abscess/115

ab'ses

acne/114

ak'nē

actinic keratoses/116

ak-tin'ik ker-ă-tō'sez

albinism/114

al'bi-nizm

allograft/125

al'ō-graft

alopecia/112

al-ō-pē'shē-ă

anesthetic/127

an-es-thet'ik

antibiotic/127

an'tē-bī-ot'ik

antifungal/127

an'tē-fūng'găl

antihistamine/127

an-tē-his'tă-mēn

antiinflammatory/127

an'tē-in-flam'ă-tō-rē

antipruritic/127

an'tē-prū-rit'ik

antiseptic/127

an-ti-sep'tik

autograft/125

aw'tō-graft

basal cell carcinoma (BCC)/117

bā'săl sel kar-si-nō'mă

basal layer/104

bā'săl lā'er

biopsy (Bx)/121

bī'op-sē

bulla/108

bul'ă

burn/114

bĕrn

carbuncle/115

kar'bŭng-kel

chemical peel/124

kem'i-kăl pēl

chemosurgery/124

kēm'ō-sŭr-jĕr-ē

chemotherapy/126

kēm'ō-thār-ă-pē

cherry angioma/109

cher'ō an-jē-ō' mă

cicatrix/109

sik'ă-triks

closed comedo/112

klōsd kom'ē-dō

collagen/104

kol'ă-jen

comedo/112

kom'ē-do

crust/109

krŭst

cryosurgery/124

krī-ō-sŭr'jĕr-ē

culture and sensitivity (C&S)/122

kŭl' chŭr and sen-si-tiv'i-tē

curettage/124

kyŭ-rē-tahzh'

cutaneous lupus/116

kyū-tā'nē-ŭs lū'pŭs

debridement/124

dā-brēd-mon'

depigmentation/113

dē-pig-men-tā'shŭn

dermabrasion/124

dĕr-mă-brā'zhŭn

dermatitis/115

dĕr-mă-tī'tis

dermatosis/115

dĕr-mă-tō'sis

dermis/104 dĕrm'is

dysplastic nevus/110 dis-plas' tik nē'vŭs ecchymosis/109

ek-i-mō'sis

eczema/115 ek'zĕ-mă

electrocautery/124 ē-lek'trō-kaw'tĕr-ē

electrodesiccation/124 ē-lek'trō-des-i-kā'shŭn

electrosurgical procedures/124 ē-lek-trō-sŭr'ji-căl prō-cē'jŭrz

epidermal tumors/110 ep-i-dĕr'măl tū'mŏrz

epidermis/104 ep-i-dĕrm'is

epithelium/104 ep-i-thē' lē-ŭm erosion/108 ē-rō'zhŭn

eruption/112 ē-rŭp'shŭn

erythema/112 er-i-thē'mă

exanthematous viral disease/115

ek-zan-them'ă-tŭs vī'răl di-zēz'

excisional biopsy/121 ek-sizh'ŭn-ăl bī'op-sē

excoriation/108 eks-kō'rē-ā'shŭn

first-degree (or 1st-degree) burn/114

first-dĕ-grē' bĕrn fissure/108 fish'ŭr

frozen section (FS)/122

frō'zĕn sek'shŭn fulguration/124 ful-gŭ-rā'shŭn

furuncle/115 fū'rŭng-kĕl

gangrene/115 gang'grēn

hair/104 hār

herpes simplex virus (HSV)/115-116

her'pēz sim'pleks vī'nĭs herpes zoster/116

her'pēz zos'tĕr heterograft/125 het'ĕr-ō-graft histamine/127

homograft/125 hō' mō-graft

his'tă-mēn

hyperpigmentation/113 hī-pĕr-pig-men-tā'shŭn hypopigmentation/113 hī' pō-pig-men-tā'shŭn

impetigo/116 im-pe-tī'gō

incisional biopsy/121 in-si'zhŭn-ăl bī'op-sē

incision and drainage (I&D)/124

in-sizh'ŭn and drān'ăj Kaposi sarcoma/117 ka-pō'sē sar-kō'mă

keloid/109 kē'loyd keratin/104 ker'ă-tin

keratoses/116 ker-ă-tō'sēz laser/125 lā'zĕr

laser surgery/125 lā'zĕr sŭr' jĕr-ē lesion/106 lē'zhŭn

lupus/116 lū'pŭs

macule or macula/107

mak'yūl

malignant cutaneous neoplasm/116

mă-lig'nănt kyū-tā'nē-ŭs nē'ō-plazm

malignant melanoma/117

mă-lig' nănt mel'ă-nō' mă

melanin/104 mel'ă-nin

melanocyte/104

mel'ă-nō-sīt

Mohs surgery/125

mōz sŭr'jĕr-ē

nail/104

nāl

nevus/110

nē'vŭs

nodule/107

nod'yūl

onychia/117

ō-nik'ē-ă

open comedo/112

ō'pĕn kom'ē-dō

paronychia/117

par-ō-nik'ē-ă

patch/107

pach

patch test/122

pach test

papule/107

pap'yūl

pediculosis/117

pĕ-dik'yū-lō'sis

pediculosis capitis/117

pĕ-dik'yū-lō'sis kap'i-tis

pediculosis pubis/118

pĕ-dik'yū-lō'sis pyū'bis

petechia/109

pe-tē'kē-ă

plaque/107

plak

primary lesions/107

prī'mār-ē lē'zhŭnz

pruritus/113

prū-rī'tŭs

psoriasis/118

sō-rī'ă-sis

purpuric lesions/109

pŭr-pū' rik lē'zhŭnz

pustule/108

pŭs'tyūl

radiation therapy/126

rā'dē-ā'shŭn thār'ǎ-pē

rash/113

rash

rubella/115

rū-bel'ă

rubeola/115

rū-bē'ō-lă

scabies/118

skā' bēz

scale/109

skāl

sclerotherapy/126

sklēr'ō-thār-ă-pē

scratch test/122

skrach test

sebaceous glands/104

sē-bā'shŭs glanz

seborrhea/118

seb-ō-rē'ă

seborrheic keratoses/116

seb-ō-rē'ik ker-ă-tō'sēz

sebum/104

sē'bŭm

secondary lesions/108

sek'ŏn-dār-ē lē'zhŭnz

second-degree (or 2nd-degree) burn/114

sek'ŭnd-dĕ-grē' bĕrn

shave biopsy/121

shāv bī'op-sē

skin grafting/125

skin graft'ing

skin pigmentation/113

skin pig-men-tā'shŭn

skin tests/122

skin testz

solar keratoses/116

sō'lăr ker-ă-tō'sez

spider angioma/109

spī'dĕr an-jē-ō'mă

squamous cell carcinoma (SCC)/116

skwā'mŭs sel kar-si-nō'mă

squamous cell layer/104

skwā'mŭs sel lā'ĕr

subcutaneous layer/104

sŭb-kyū-tā'nē-ŭs lā'ĕr

sudoriferous glands/104

sŭ-dō-ri' fĕ r-ŭs glanz

suppuration/113

sŭp'yŭ-rā'shйn

systemic lupus erythematosus

(SLE)/116

sis-tem' ik lū' pŭs ĕ r-i-thē' m ă-t ō-sĭs

telangiectasia/109

tel-an'jē-ek-tā'zē-ă

third-degree (or 3rd-degree) burn/114

thĭrd-dĕ-grē' bĕrn

tinea/118

tin'ē-ă

tumor/107

tū'mŏr

ulcer/108

ŭl'sĕr

ultraviolet therapy/126

йl-tră-vī'ō-let thār'ă-pē

urticaria/113

ŭr-ti-kar' i-ă

varicella/115

var-i-sel'ă

vascular lesions/109

vas' kyū-lăr lē'zhŭnz

verruca/110

vĕ-rū'kă

vesicle/108

ves' i-kĕl

vitiligo/118

vit-i-lī'gō

wheal/108

wēl

xenograft/125

zen'ō-graft

xeroderma/113

zēr'ō-dĕr'mă



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

hypodermic

hypo / derm / ic

P R S

DEFINITION: below or deficient/skin/pertaining to

					1	0	
1.	onychomalac	eia					
		_/					
	CF	S					
	DEFINITION:						
2.	mycotic						
		/					
	CF	S					
	DEFINITION:				 		
3.	dermatologis	t					
		_/					
	CF	S					
	DEFINITION:				 		
4.	histotrophic						
		_/	/				
	CF	R	S	S			
	DEFINITION:				 		
5.	paronychia						
		_/	/				
	P	R	S				
	DEFINITION:				 		
6.	hyperkeratos						
		_/	/				
	P	R	S	;			
	DEFINITION:				 		
7.	leukotrichia						
		/	/				
		R					
	DEFINITION:						

8.	mycology				
		_/			
		S			
0					
9.	epidermal	1	,		
		_/			
		R	S		
10					
10.	lipoma	1			
	R	_/			
11	subcutaneou				
11.		_/	/		
		_			
12	anhidrosis				
_,		_/	/		
		R			
13.	histopatholog				
	-	_	/		
	CF		S		
14.	dysplasia				
		_/	/		
	P	R	S		
	DEFINITION:				
15.	adiposis				
		_/			
	R				
16.	squamous				
		_/			
	R	S			
	DEFINITION:				

MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE

17.	erythroderma		1		
	CF	R	S S		
18.	desquamatio		_/		
	P	R			
19.	histotoxic	_/	_/		
	CF	R			
20.	melanocyte	_/	_/		
	DEFINITION:	R	S		
21.	xerosis	_/	_		
		S			
22.	purpuric	_/	_		
	DEFINITION:	S			
	seborrhea	_/	_		
	CF DEFINITION:	S			
24.	xanthoma	_/	_		
	R DEFINITION:_	S			
25.	asteatosis	_/	_/		
	P DEFINITION:	R	S		

Write the correct medical term for each of the following definitions:

	death of tissue associated with loss of blood supply
	transfer of skin to a new position in the body of the same
	person
	black and blue mark
	severe itching
	a cluster of furuncles
	fungal skin disease
	hives
	a graft transfer from one animal species to one of another species
	pubic lice
	a boil
	freckle
	flake of exfoliated epidermis
	head lice
	baldness
	virus that causes cold sores
	study of tissue
	redness of skin
	a blackhead
	mark left by a healed wound
	a linear crack in the skin
	surgery that freezes tissue
	excision of tissue for microscopic study
	appearance of a skin lesion
	abnormal scar formation
olete each medical term by writir	ng the missing word or word part:
oma = black tumor	
sebo = discharge of oil	
coriation = scratch mar	k on skin
derma = white skin	
section = type of r	nicroscopic study of fresh tissue
derma = red skin	
derma = hard skin	
keratoses = thicke	ened skin tumors seen in old age
oma = fat tumor	
	plete each medical term by writin oma = black tumor sebo = discharge of oil coriation = scratch man derma = white skin section = type of r derma = red skin derma = hard skin keratoses = thicker

81.	keratosis	
82.	ecchymosis	
	bulla	
84.	macula	
85.	nevus	

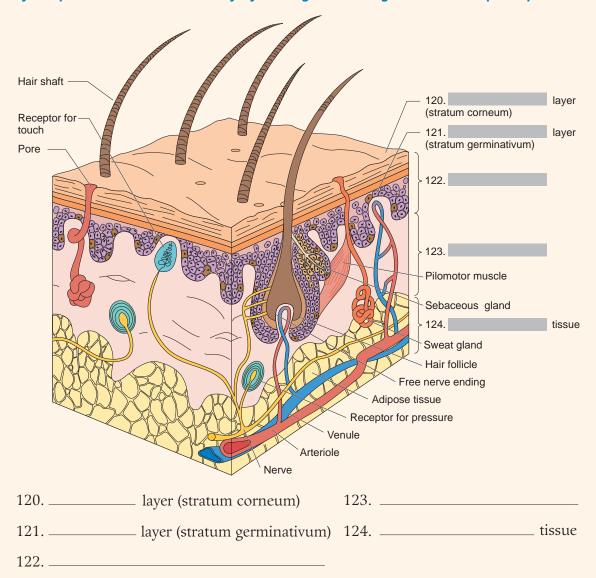
138	IVIEDICAL TERIVIIN	IOLOGY: A F	PROGRAMIMED LEA	KINIIN	3 APPROACH TO TH	TE LANGUAGE OF H
Mato	h the following te	rms with	their meanings:			
86.	scabies			a.	chemical peel	
87.	cryosurgery			b.	crabs	
88.	telangiectasia			c.	mites	
89.	nevus			d.	freezing treatm	nent
90.	cicatrix			e.	intense light	
91.	actinic keratoses			f.	desiccation	
92.	radiation therapy			g.	spider angioma	a
93.	petechia			h.	mole	
94.	liposis			i.	scar	
95.	verruca			j.	cancer treatme	ent
96.	chemosurgery			k.	wart	
97.	electrosurgery			1.	solar keratoses	;
98.	pediculosis			m.	purpuric lesion	1
99.	laser			n.	adiposis	
Circle	e the correct spellir	ng:				
100.	cicatrix		scicatrix			cicatrex
101.	puritis		purritis			pruritus
102.	petechia		patechia			petecchia
103.	veruca		verucca			verruca
104.	eckamosis		ecchymosis			eckemyosis
105.	excission		excisison			excision
106.	soriasis		psoreyeasis			psoriasis
107.	impetigo		infantiego			impatiego
108.	eggszema		eczema			ecczema
109.	debridemant		debridement			debreedment
Give	the noun that is us	sed to for	m each adjectiv	e:		
110.	keratotic					
111.	bullous					
112.	nodular					
113.	seborrheic					
114.	petechial					

115. ecchymotic116. urticarial117. eczematous

118. macular

119. suppurative

Identify the parts of the skin's anatomy by writing the missing words in the spaces provided:



Circle the combining form that corresponds to the meaning given:

125. fat	leuk/o	steat/o	seb/o
126. black	necr/o	trich/o	melan/o
127. fungus	seb/o	myc/o	onych/o
128. nail	onych/o	trich/o	squam/o
129. red	xanth/o	purpur/o	erythr/o
129. red 130. hair	xanth/o trich/o	purpur/o histi/o	erythr/o fibr/o
		1 1	•



MEDICAL RECORD ANALYSIS

Medical Record 3-1

PROGRESS NOTE

- S: This is a 30 y.o. ♀ presenting with an erythematous and scaly eruption on the face and ears × 6 mo. Stress and emotional tensions aggravate the rash. Over-the-counter remedies provide no relief.
- O: Patchy erythema with greasy, yellowish scaling appears over the nose and along the eyebrows. The external ears are similarly affected. Erythematous papules are scattered across the face, and there is \(^1\) oiliness around the nose.
- A: Seborrheic dermatitis.
- P: Rx: hydrocortisone cream, \overline{ss} oz tube Sig: apply to affected areas t.i.d.

QUESTIONS ABOUT MEDICAL RECORD 3-1

- 1. What is the sex of the patient?
 - a. male
 - b. female
 - c. not stated
- 2. What is the patient's CC?
 - a. stress and emotional tension
 - b. appearance of raised, yellow, pus-filled lesions on the skin
 - c. appearance of red areas on the skin with flaking of the outer layers of the skin
 - d. appearance of red areas on the skin with open sores
 - e. appearance of a communicable rash on the face and ear
- 3. What is the diagnosis?
 - a. inflammation of the sebaceous glands and hair follicles of the skin, as evidenced by comedones
 - b. fungus of the skin
 - c. inflammation of the skin with excessive secretion of sebum from the sebaceous glands
 - d. highly contagious bacterial skin inflammation marked by pustules that rupture and become crusted
 - e. transient, viral cold sores that infect the facial area

- 4. How much hydrocortisone cream was prescribed?
 - a. one ounce
 - b. two ounces
 - c. one-half dram
 - d. one dram
 - e. one-half ounce
- 5. What is the Sig: on the prescription?
 - a. apply to affected areas twice a day
 - b. apply to affected areas three times a day
 - c. apply to affected areas four times a day
 - d. apply to affected areas every two hours
 - e. apply to affected areas every three hours

Medical Record 3-2

FOR ADDITIONAL STUDY

After ignoring various skin problems for months, Robert Fuller consulted his doctor in October, when he became alarmed by what he saw happening on his right hand. His doctor referred him to Dr. Luong, a dermatologist, who then diagnosed and treated Mr. Fuller. Medical Record 3–2 is a SOAP progress note dictated by Dr. Luong immediately after the treatment of Mr. Fuller and transcribed the next day by his assistant.

Read Medical Record 3–2 (page 142), then write your answers to the following questions in the spaces provided.

OUESTIONS ABOUT MEDICAL RECORD 3-2

1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below:
	vulgaris
	verruciform
2.	In your own words, not using medical terminology, briefly describe Mr. Fuller's complaint:
3.	In your own words, not using medical terminology, briefly describe Dr. Luong's three objective findings:
	a
	b
	c
4.	Define the three diagnoses for those three objective findings:
	a
	b
	C
5.	Briefly describe the treatments for those three diagnoses:
	a
	b
	c
6.	What did Dr. Luong tell Mr. Fuller might occur in the future? Check all that apply:
	scarring where the lesions were
	nausea and possible vomiting from the nitrogen
	red, freckle-like spots appearing on the right hand
	possible regrowth of lesions
	self-desiccating tissue destruction
	sen-desiceaning assue destruction

Medical Record 3-2: For Additional Study

CENTRAL MEDICAL GROUP, INC.

Department of Dermatology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

CHART NOTE

PATIENT: FULLER, ROBERT K.

DATE: October 19, 20xx

The patient presents with a growth on the right hand, multiple lesions, and **SUBJECTIVE:**

other growths.

Ulcerated growth on the right hand, marked A; one verruciform tumor on the **OBJECTIVE:**

left hand; erythematous keratotic patches on the arms.

Basal cell carcinoma, verruca vulgaris, and actinic keratoses. **ASSESSMENT:**

Following full counseling on healing with scarring, keloids, and possible PLAN:

recurrence, the growth from the right hand was excised. The site was anesthetized with Xylocaine 2% without epinephrine, 2 cc. Following excision, the bases of the growths were treated with fulguration and electrodesiccation. Desiccation was also performed on 0.3 cm of normal surrounding skin. The wart was treated with liquid nitrogen, two cycles. Freezing time: 8-10 seconds. Ten erythematous keratotic patches were also treated with liquid nitrogen, two cycles. Freezing time: 10-14 seconds.

Jon Me 2

DL:ti

D: 10/19/20xx T: 10/20/20xx

ANSWERS TO PRACTICE EXERCISES

- 1. onycho/malacia CF nail/softening
- 2. myco/tic CF

fungus/pertaining to

- 3. dermato/logist CF skin/one who specializes in the study or treatment of
- 4. histo/troph/ic R S CF tissue/nourishment or development/pertaining
- 5. par/onych/ia R S alongside of/nail/condition of
- 6. hyper/kerat/osis R above or excessive/ hard/condition or increase
- 7. leuko/trich/ia R S white/hair/condition of
- 8. myco/logy CF fungus/study of
- 9. epi/derm/al upon/skin/pertaining to
- 10. lip/oma R fat/tumor
- 11. <u>sub/cutane/ous</u> R below or under/skin/ pertaining to
- 12. an/hidr/osis R without/sweat/condition or increase
- 13. histo/patho/logy CF tissue/disease/study of

- 14. dys/plas/ia R S painful, difficult, or faulty/formation/condition of
- 15. adip/osis R fat/condition or increase

16. squam/ous

scale/pertaining to 17. erythro/dermat/itis CF R

R

red/skin/inflammation

- 18. de/squam/ation R from, down, or not/scale/process
- 19. histo/tox/ic CF tissue/poison/pertaining
- 20. melano/cyt/e CF R S black/cell/noun marker
- 21. xer/osis dry/condition or increase
- 22. purpur/ic purple/pertaining to
- 23. sebo/rrhea CF sebum (oil)/discharge
- 24. xanth/oma R S yellow/tumor
- 25. a/steat/osis P R without/fat/condition or increase
- 26. gangrene
- 27. autograft
- 28. ecchymosis
- 29. pruritus
- 30. carbuncle
- 31. tinea

- 32. urticaria
- 33. heterograft
- 34. pediculosis pubis
- 35. furuncle
- 36. macule or macula
- 37. scale
- 38. pediculosis capitis
- 39. alopecia
- 40. herpes simplex virus type 1
- 41. histology
- 42. erythema
- 43. open comedo
- 44. cicatrix
- 45. fissure
- 46. cryosurgery
- 47. biopsy
- 48. eruption
- 49. keloid
- 50. melanoma
- 51. seborrhea
- 52. excoriation
- 53. leukoderma
- 54. frozen section
- 55. erythroderma
- 56. keratoderma or sclero-
- 57. seborrheic keratoses
- 58. lipoma or steatoma
- 59. xanthoderma
- 60. mycosis
- 61. hypodermic
- 62. cherry angioma
- 63. xeroderma
- 64. rubella
- 65. varicella
- 66. rubeola
- 67. f
- 68. i
- 69. c
- 70. h
- 71. d
- 72. g
- 73. a
- 74. j 75. b
- 76. e
- 77. herpes simplex virus type 2

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 3-1: Progress Note

1. b 2. c 3. c 4. e 5. b

Medical Record 3-2: For Additional Study

See CD-ROM for answers.





CHAPTER

4

Musculoskeletal System

✓ Chapter 4 Checklist	LOCATION
 Read Chapter 4: Musculoskeletal System and complete all programmed review segments. 	pages 145-185
$\hfill\Box$ Review the starter set of flash cards and term components related to Chapter 4.	back of book
☐ Complete the Chapter 4 Practice Exercises and Medical Record Analysis 4-1.	pages 190-200
☐ Complete Medical Record Analysis 4-2 For Additional Study.	pages 201-203
☐ Complete the Chapter 4 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 4 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 4 terms.	CD-ROM

MUSCULOSKELETAL SYSTEM OVERVIEW

Functions of the skeleton (Fig. 4-1):

- 🌞 Provides support and shape to the body through a framework of bones and cartilage
- Stores calcium and other minerals
- Produces certain blood cells within bone marrow

Functions of the muscles (Fig. 4-2):

- Supply the forces that make body movements possible
- Provide a protective covering for the internal organs
- Produce body heat

Orthopedics is the specialty most involved with the study and treatment of the musculoskeletal system. The spelling *orthopaedic* (the British form of the term) is frequently used, as in the name of the American Board of Orthopaedic Surgery.

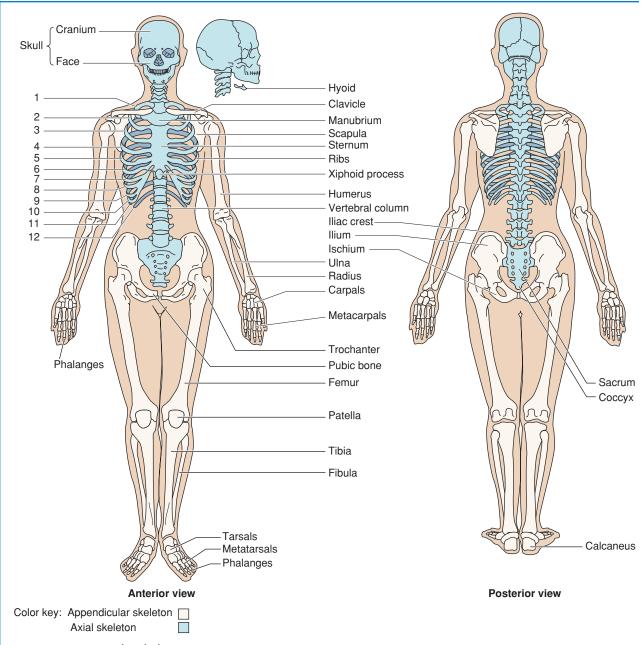


FIGURE 4-1

The skeleton.

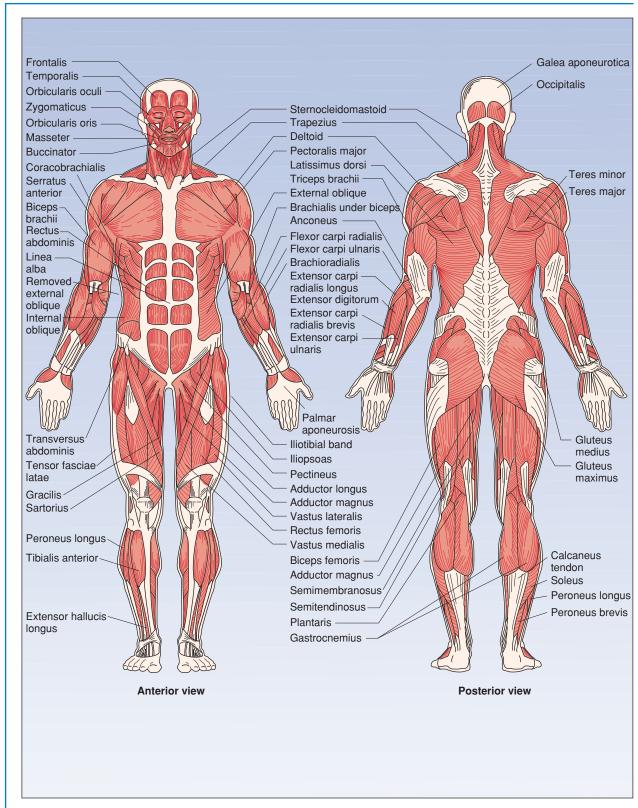


FIGURE 4-2 Skeletal muscles.



Self-Instruction: Combining Forms

COMBINING FORM	MEANING
ankyl/o	crooked or stiff
arthr/o, articul/o	joint
brachi/o	arm
cervic/o	neck
chondr/o	cartilage (gristle)
cost/o	rib
crani/o	skull
dactyl/o	digit (finger or toe)
fasci/o	fascia (a band)
femor/o	femur
fibr/o	fiber
kyph/o	humped-back
lei/o	smooth
lord/o	bent
lumb/o	loin (lower back)
my/o, myos/o, muscul/o	muscle
myel/o	bone marrow or spinal cord
oste/o	bone
patell/o	knee cap
pelv/i	pelvis (basin) or hip bone
radi/o	radius
rhabd/o	rod-shaped or striated (skeletal)
sarc/o	flesh
scoli/o	twisted
spondyl/o, vertebr/o	vertebra
stern/o	sternum (breastbone)
ten/o, tend/o, tendin/o	tendon (to stretch)
thorac/o	chest
ton/o	tone or tension
uln/o	ulna



Programmed Review: Combining Forms

ANSWERS	REVIEW
straight, normal, or correct foot orthopaedic	4.1 <i>Orth/o</i> , meaning, and <i>ped/o</i> , meaning, are combined to form the term orthopedic, meaning pertaining to the medical specialty related to the musculoskeletal system. The British spelling for this specialty is
oste/o -itis myel/o	4.2 The combining form meaning bone is The suffix means inflammation. Osteitis therefore refers to inflammation of bone. Inside most bones is bone marrow; the combining form meaning bone marrow is, as in the adjective myeloid.
myos/o muscle inflammation	4.3 The three combining forms for muscle are <i>muscul/o</i> , <i>my/o</i> , and The musculoskeletal system involves both muscles and bones. Recalling that the suffix <i>-algia</i> means pain, myalgia must mean pain. Myositis is an of muscle.
skull crani/o cervical neck	4.4 The cranial bones comprise the The combining form that means skull is Neck bones are referred to as the vertebrae, from the combining form <i>cervic/o</i> , meaning
spondyl/o vertebrae twisted condition or increase lord/o kyph/o lumb/o pain, lower	4.5 The two combining forms for vertebrae, the bones of the spine, are vertebr/o and Spondylitis is inflammation of the Scoli/o means, and when combined with the suffix -osis, which means, it forms the word scoliosis, which refers to a condition of having a twisted spine. The combining form meaning bent is, and a spine that is bent forward is called lordosis. The condition of a humped back is called kyphosis, from the combining form, meaning humped-back. The lower back is the lumbar spine, from the combining form, tumbodynia refers to, in the, back.

ANSWERS	REVIEW
chondr/o	4.15 Cartilage is a gristle-like substance that covers bones where they articulate at joints. Chondroma is a tumor that arises from cartilage, the combining form for which is
fibr/o smooth tumor, striated	4.16 Muscle fibers have the ability to contract, allowing them to move bones and, thus, body parts. The combining form for fiber is, and a common adjective form is fibrous. Muscles are composed of either smooth (<i>lei/o</i>) or striated (<i>rhabd/o</i>) muscle tissues. A leiomyoma is a tumor of muscle. A rhabdomyoma is a of (skeletal) muscle.
ton/o muscle tone	4.17 The combining form for tone is Therefore, myotonia refers to a condition of
tend/o inflammation	4.18 A tendon connects muscle to bone. Three combining forms for tendon are <i>ten/o</i> ,, and <i>tendin/o</i> . Tendinitis is of a tendon.
fasci/o	4.19 Fascia is a band or sheet of fibrous tissue that encloses muscles or groups of muscles. It comes from the combining form
flesh tumor	4.20 <i>Sarc/o</i> means or a muscular substance. A sarcoma, for example, is a fleshy



Self-Instruction: Anatomic Terms Related to Bones

TERM	MEANING
appendicular skeleton ap'en-dik' yū-lăr skel'ĕ-tŏn	bones of the shoulder, pelvis, and upper and lower extremities
axial skeleton ak' sē-ăl skel' ĕ-tŏn	bones of the skull, vertebral column (Fig. 4-3), chest, and hyoid bone (U-shaped bone at the base of the tongue)
bone bōn	specialized connective tissue composed of osteocytes (bone cells); forms the skeleton
TYPES OF BONE TISSUE	
compact bone kom' pakt bōn	tightly solid bone tissue that forms the exterior of bones

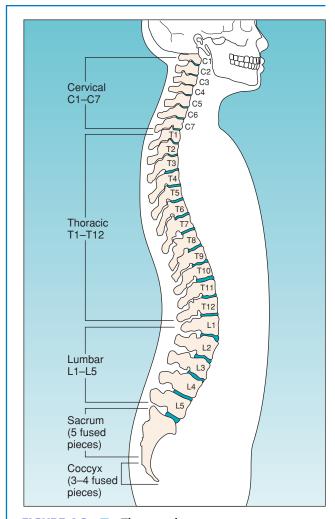
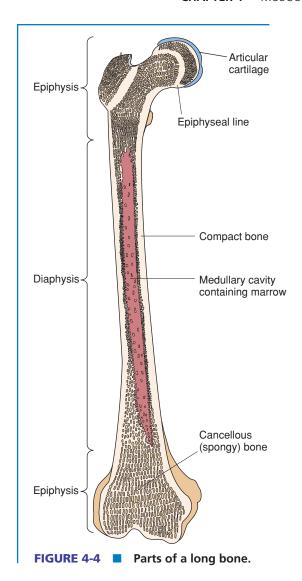


FIGURE 4-3

The vertebrae.

TERM	MEANING
spongy bone spŏn' jē bōn cancellous bone kan' sĕ-lŭs bōn	mesh-like bone tissue found in the interior of bones, and surrounding the medullary cavity
CLASSIFICATION OF BONES	
long bones long bonz	bones of the arms and legs
short bones short bonz	bones of the wrist and ankles
flat bones flat bonz	bones of the ribs, shoulder blades, pelvis, and skull
irregular bones ir-reg'yū-lăr bōnz	bones of the vertebrae and face
sesamoid bones ses'ă-moyd bōnz	round bones found near joints (e.g., the patella)



TERM	MEANING
PARTS OF A LONG BONE (Fig. 4-4)	
epiphysis e-pif'i-sis	wide ends of a long bone (<i>physis</i> = growth)
diaphysis dī-af'i-sis	shaft of a long bone
metaphysis mĕ-taf'i-sis	growth zone between the epiphysis and the diaphysis during development of a long bone
endosteum en-dos' tē-ŭm	membrane lining the medullary cavity of a bone
medullary cavity med'ŭl-ār-ē kav'i-tē	cavity within the shaft of the long bones; filled with bone marrow
bone marrow bōn ma'rō	soft connective tissue within the medullary cavity of bones

TERM	MEANING
red bone marrow rĕd bōn ma'rō	functions to form red blood cells, some white blood cells, and platelets; found in the cavities of most bones in infants and in the flat bones in adults
yellow bone marrow yel'ō bōn ma'rō	gradually replaces red bone marrow in adult bones; functions as storage for fat tissue and is inactive in the formation of blood cells
periosteum per-ē-os' tē-ŭm	a fibrous, vascular membrane that covers the bone
articular cartilage ar-tik'yu-lăr kar'ti-lij	a gristle-like substance on bones where they articulate

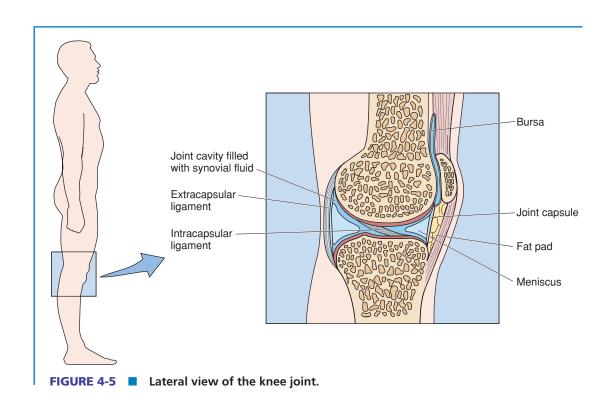
Programmed Review: Anatomic Terms Related to Bones

ANSWERS	REVIEW
axial, appendicular	4.21 The skeleton as a whole is divided into the appendicular skeleton and the skeleton. The skeleton includes the shoulders and arms and the pelvis and legs. The axial skeleton includes the spine, chest, and
osteo compact, Cancellous	4.22 Bone cells, orcytes, form the skeleton. The tightly solid bone tissue that forms the exterior of bones is called bone bone is the spongy, mesh-like bone tissue found in the interior of bones, and surrounding the medullary cavity.
arms, legs Short flat round	4.23 Long bones are found in the and bones are found in the wrists and ankles. The ribs, shoulder blades, and pelvis are bones. Bones of the vertebrae and face are called irregular bones. Sesamoid bones are bones (e.g., the patella) near joints.
end dia, physis	4.24 Long bones have several parts. Several of these parts are named with terms from the root <i>physis</i> (growth), referring to how the bones grow. The epiphysis is the wide of a long bone. The physis is the shaft. The meta is the growth zone between the epiphysis and the diaphysis.

ANSWERS	REVIEW
within	4.25 The prefix <i>endo-</i> means The endosteum is a
bone	membrane lining the medullary cavity within a Inside the
marrow, Red	medullary cavity is bone bone marrow
marrow	makesred blood cells, whereas yellow bone stores
fat	tissue. The membrane that covers a bone is called the
periosteum	, from the combining term for bone (oste/o) and the
around	prefix <i>peri-</i> , meaning
	4.26 The kind of cartilage that is found where bones articulate is
articular	called cartilage.

Self-Instruction: Anatomic Terms Related to Joints and Muscles

TERM	MEANING
articulation (Fig. 4-5) ar'tik-yū-lā'shĭın	a joint; the point where two bones come together
bursa bŭr' să	a fibrous sac between certain tendons and bones that is lined with a synovial membrane that secretes synovial fluid



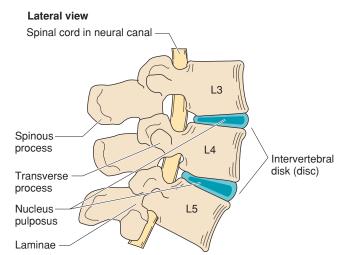


FIGURE 4-6 Lateral view of the lower lumbar vertebrae.

TERM	MEANING
disk or disc (Fig. 4-6) disk	a flat, plate-like structure composed of fibrocartilaginous tissue between the vertebrae that reduces friction
nucleus pulposus nū' klē-ŭs pōl-pō' sŭs	the soft, fibrocartilaginous, central portion of intervertebral disk
ligament lig'ă-mĕnt	a flexible band of fibrous tissue that connects bone to bone
synovial membrane si-nō' vē-ăl mem' brān	membrane lining the capsule of a joint
synovial fluid si-nō' vē-ăl flū' id	joint-lubricating fluid secreted by the synovial membrane
muscle mŭs'ĕl	tissue composed of fibers that can contract, causing movement of an organ or part of the body
striated muscle strī'āt-ĕd mŭs'ĕl skeletal muscle skel'e-tăl mŭs'ĕl	voluntary muscle attached to the skeleton
smooth muscle smūth mŭs'ĕl	involuntary muscle found in internal organs
cardiac muscle kar' dē-ak mŭs'ĕl	muscle of the heart
origin of a muscle ōr'i-jin of a mŭs'ĕl	muscle end attached to the bone that does not move when the muscle contracts
insertion of a muscle in-sĕr'shŭn of a mŭs'ĕl	muscle end attached to the bone that moves when the muscle contracts
tendon ten' dŏn	a band of fibrous tissue that connects muscle to bone
fascia fash'ē-ă	a band or sheet of fibrous connective tissue that covers, supports, and separates muscle

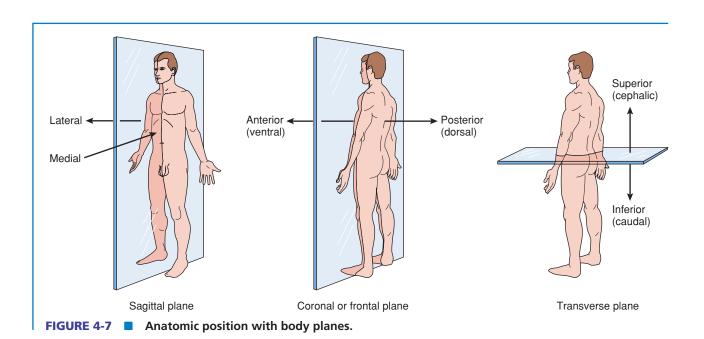
Programmed Review: Anatomic Terms Related to Joints and Muscles

ANSWERS	REVIEW
Muscle	4.27 tissue can contract, causing movement of an organ or body part. There are three types of muscle tissue.
Smooth	muscle is found in internal organs and is also called involuntary muscle, because you cannot will it to contract. Cardiac
muscle, heart	is an involuntary muscle found only in the
striated	Skeletal muscle, or muscle, is under voluntary control.
origin insertion tendons	4.28 Skeletal muscle is attached to bone at both ends of the muscle. The end attached to the bone that does not move when the muscle contracts is called the of the muscle. The other end, which is attached to the bone and that moves with contraction, is called the of the muscle. Muscles are connected to bones by The band or sheet of fibrous tissue that covers
fascia	muscles is called
articulation ligament synovial fluid	4.29 The point where two muscles come together is called a joint or an A fibrous band that connects bone to bone is a The joint capsule is lined with a membrane, which secretes a lubricating fluid called synovial
bursa inflammation	4.30 The fibrous sac between certain tendons and bones is a; an inflammation of this tissue is called bursitis. The suffix <i>-itis</i> means
disks, discs pulposus	4.31 The flat, plate-like structures between the vertebrae are called, which sometimes is also spelled The nucleus is a soft fibrocartilaginous tissue in the center of intervertebral disks.



Self-Instruction: Anatomic Position and Terms of Reference

TERM	MEANING	
anatomic or anatomical position an-ah-tŏm' ik or an-ah-tŏm' ik-ăl pō-zĭ' shŭn	a term of reference that health professionals use when noting body planes, positions, or directions: the person is assumed to be standing upright (erect), facing forward, feet pointed forward and slightly apart, with arms at the sides and palms facing forward; the patient is visualized in this pose when applying any other term of reference	
body planes (Fig. 4-7) <i>bod'ē plānz</i>	reference planes for indicating the location or direction of body parts	
BODY PLANES		
coronal plane kōr'ŏ-năl plān frontal plane frŏn' tăl plān	vertical division of the body into front (anterior) and back (posterior) portions	
sagittal plane saj'i-tăl plān	vertical division of the body into right and left portions	
transverse plane trans-věrs' plān	horizontal division of the body into upper and lower portions	
DIRECTIONAL TERMS		
anterior (A) an-tēr'ē-ŏr ventral ven' trăl	front of the body	



TERM	MEANING
posterior (P) pos-tēr'ē-ŏr dorsal dōr'săl	back of the body
anterior-posterior (AP)	from front to back, as in reference to the direction of an x-ray beam
posterior-anterior (PA)	from back to front, as in reference to the direction of an x-ray beam
superior sū-pēr'ē-ŏr cephalic se-fal' ik	situated above another structure, toward the head
inferior in-fēr'ē-ŏr caudal kaw' dăl	situated below another structure, away from the head
proximal prok'si-măl	toward the beginning or origin of a structure; for example, the proximal aspect of the femur (thigh bone) is the area closest to where it attaches to the hip
distal dis' tăl	away from the beginning or origin of a structure; for example, the distal aspect of the femur (thigh bone) is the area at the end of the bone near the knee
medial mē' dē-ăl	toward the middle (midline)
lateral lat'er-ăl	toward the side
axis ak'sis	the imaginary line that runs through the center of the body or a body part
BODY POSITIONS	
erect ē-rĕkt'	normal standing position
decubitus dē-kyū' bi-tŭs	lying down, especially in a bed; lateral decubitus is lying on the side (decumbo = to lie down)
prone pron	lying face down and flat
recumbent rē-kŭm' bĕnt	lying down
supine (Fig. 4-8) <i>sū-pīn'</i>	horizontal recumbent; lying flat on the back ("on the spine")

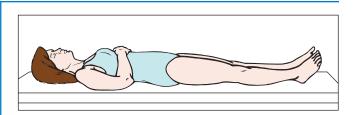
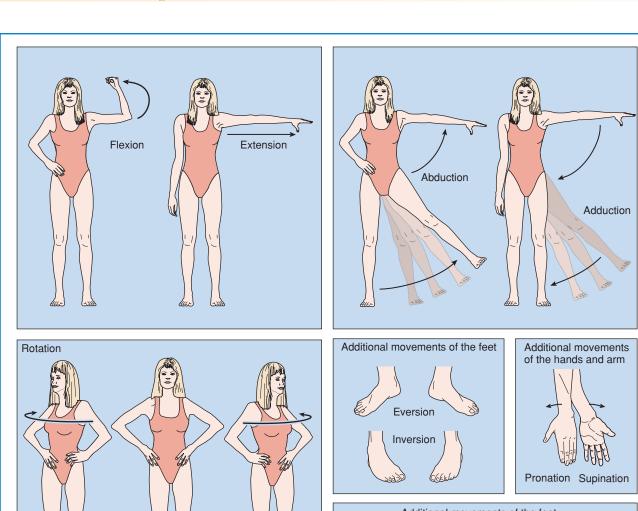


FIGURE 4-8 Supine (horizontal recumbent) position. Patient lies on back with the legs extended.

TERM MEANING BODY MOVEMENTS (Fig. 4-9) flexion bending at the joint so that the angle between the bones is decreased flek'shŭn



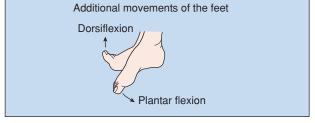


FIGURE 4-9 Body movements.

TERM	MEANING
extension eks-ten' shŭn	straightening at the joint so that the angle between the bones is increased
abduction ab-dŭk' shŭn	movement away from the body
adduction ă-dŭk'shŭn	movement toward the body
rotation rō-tā' shŭn	circular movement around an axis
eversion ē-ver'zhŭn	turning outward, i.e., of a foot
inversion in-vĕr' zhŭn	turning inward, i.e., of a foot
supination $s\bar{u}'pi-n\bar{a}'sh\bar{u}n$	turning of the palmar surface (palm of the hand) or plantar surface (sole of the foot) upward or forward
pronation prō-nā' shŭn	turning of the palmar surface (palm of the hand) or plantar surface (sole of the foot) downward or backward
dorsiflexion dōr-si-flek' shŭn	bending of the foot or the toes upward
plantar flexion plan' tăr flek' shŭn	bending of the sole of the foot by curling the toes toward the ground
range of motion (ROM) rānj of mō' shŭn	total motion possible in a joint, described by the terms related to body movements (i.e., ability to flex, extend, abduct, or adduct); measured in degrees
goniometer (Fig. 4-10) $g\bar{o}$ - $n\bar{e}$ - $om'\bar{e}$ - $t\bar{e}r$	instrument used to measure joint angles (gonio = angle)

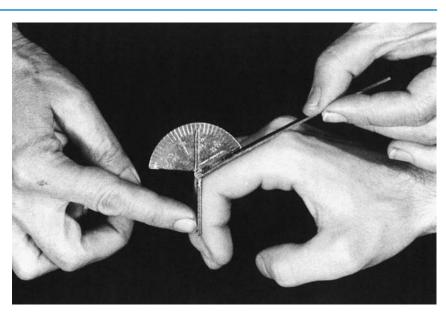


FIGURE 4-10 Dorsal placement of goniometer used when measuring digital motion.



Programmed Review: Anatomic Position and Terms of Reference

ANSWERS	REVIEW
anatomic erect, forward sides forward	4.32 Health professionals describe body part locations relative to the position, in which one is standing upright, or, and is facing, with the feet pointed forward and slightly apart, the arms at the, and the palms facing
planes coronal sagittal horizontally	4.33 Body help one to understand directional and positional terms. The body is vertically divided into front (anterior) and back (posterior) portions by the, or frontal, plane. The plane divides the body vertically into right and left portions. The transverse plane divides the body into upper and lower portions.
before after anterior posterior	4.34 Recall that the prefix <i>ante-</i> means and the prefix <i>post-</i> means Using these word parts, the front of the body is (also called ventral), and the back of the body is (also called dorsal).
anterior-posterior posterior-anterior	4.35 The direction of an x-ray beam from front to back is designated, whereas the direction from back to front is designated
superior inferior	4.36 The head is to, or above, the shoulders, whereas the feet are to, or below, the knees.
closest distal proximal	4.37 The proximal aspect of a structure is the area to its origin or attachment. The aspect of a structure is the area away from its origin or attachment. The aspect of the femur (thigh bone) is the area closest to where it attaches to the hip. The distal aspect of the femur (thigh bone) is the area at the of the bone near the knee.
medial side	4.38 Toward the middle or midline is called, whereas lateral means toward the
axis	4.39 An imaginary line that runs through the center of the body or a body part is called an For example, you can rotate your wrist on its axis.

ANSWERS	REVIEW
erect	4.40 The normal standing position is (as in the anatomic position). Several terms describe different ways the body lies down.
recumbent	The general term for lying down is Lying down,
decubitus	especially in bed, is called A patient lying on one
lateral	side in bed is in a decubitus position. Prone means
face, supine	lying down and flat, and means lying face up,
	flat on the back.
decreases	4.41 Many different terms are used to describe body movements at joints. Flexing a joint (flexion) the angle between the bones; the opposite movement (increasing the angle) is
extension, away	Movement from the body is called
away from	abduction (the prefix <i>ab-</i> means); the opposite
adduction	movement is called (the prefix <i>ad-</i> means
toward).
rotation	4.42 A circular movement around an axis is called For example, you can rotate your feet inward and outward. The term for inward rotation is inversion; the term for outward rotation begins with the prefix <i>e</i> - (out or away):
supination, pronation	4.43 Turning the palm of the hand upward or forward is called; the opposite movement is called
	Note the relationship of these terms to the terms for the body lying supine or prone.
dorsiflexion	4.44 The foot and toes bend upward in and
plantar flexion	downward in
range	4.45 The total amount of motion in a joint is called its of motion. In certain musculoskeletal conditions, the range of motion may decrease. The instrument used to measure a joint angle is a
goniometer	

Self-Instruction: Symptomatic Terms

TERM	MEANING
arthralgia ar-thral' jē-ă	joint pain
atrophy at'rō-fē	shrinking of muscle size
crepitation krep-i-tā'shŭn crepitus krep'i-tŭs	grating sound sometimes made by the movement of a joint or broken bones
exostosis eks-os-tō' sis	a projection arising from a bone that develops from cartilage
flaccid flas'ĭd	flabby, relaxed, or having defective or absent muscle tone
hypertrophy hī-pĕr'trō-fē	increase in the size of tissue, such as muscle
hypotonia hī' pō-tō' nē-ă	reduced muscle tone or tension
myalgia mī-al'jē-ă myodynia mī'ō-din'ē-ă	muscle pain
ostealgia os-tē-al'jē-ă osteodynia os-tē-ō-din'ē-ă	bone pain
rigor rigʻŏr rigidity ri-jidʻ i-tē	stiffness; stiff muscle
spasm spazm	drawing in; involuntary contraction of muscle
spastic spas' tik	uncontrolled contractions of skeletal muscles, causing stiff and awkward movements (resembles spasm)
tetany tet'ă-nē	tension; prolonged, continuous muscle contraction
tremor trem'ŏr	shaking; rhythmic muscular movement

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
crepitation	4.46 Broken bones rubbing together may produce a grating sound, which is called crepitus or This sound may also occur in a joint.
outside exostosis	4.47 Recall that the prefix <i>exo-</i> means A term for a cartilage projection growing outside a bone is
-algia osteodynia, ostealgia myodynia, myalgia arthralgia	4.48 Two suffixes for pain are -dynia and Using the combining form for bone, two terms for bone pain are and Two similarly formed terms for muscle pain are and Using the combining form arthr/o, the term for joint pain is
above or excessive increased atrophy	4.49 The prefix <i>hyper-</i> means Hypertrophy refers to muscle size. Shrinking muscle size is called
deficient hypotonia flaccid	4.50 The prefix <i>hypo-</i> means below or A condition of reduced muscle tension or tone is called In such a case, the muscle can be said to be flabby or
rhythmic	4.51 Tremor, from the Latin word for shaking, is a muscular movement. This may result from certain neurologic conditions.
rigor	4.52 A stiff muscle is called or rigidity.
spasm tetany, condition	4.53 An involuntary contraction of a muscle is called a A prolonged, continuous muscle contraction is a condition called Recall that the suffix -y means a or process.



Self-Instruction: Diagnostic Terms

TERM	MEANING
ankylosis ang'ki-lō'sis	stiff joint condition
arthritis ar-thrī' tis	inflammation of the joints characterized by pain, swelling, redness, warmth, and limitation of motion; there are more than 100 different types of arthritis

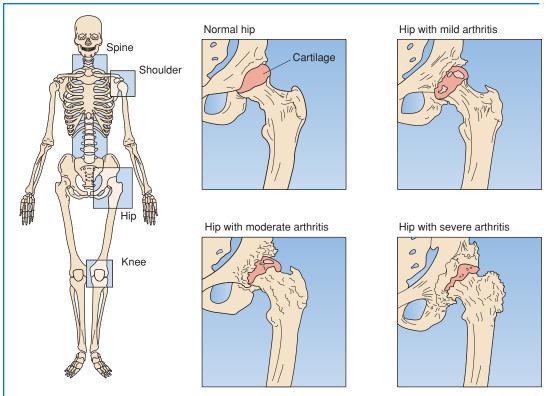


FIGURE 4-11 Osteoarthritis. A. Common sites of osteoarthritis. B. How osteoarthritis affects the hip.

TERM	MEANING
osteoarthritis (OA) (Fig. 4-11) os' tē-ō-ar-thrī' tis degenerative arthritis dē-jen'ĕr-ă-tiv ar-thrī' tis degenerative joint disease (DJD) dē-jen'ĕr-ă-tiv joynt di-zēz'	most common form of arthritis, especially affecting the weight-bearing joints (e.g., knee or hip), characterized by the erosion of articular cartilage
rheumatoid arthritis (RA) (Fig. 4-12) rū'mă-toyd ar-thrī'tis	most crippling form of arthritis; characterized by chronic, systemic inflammation, most often affecting joints and synovial membranes (especially in the hands and feet) and causing ankylosis and deformity
gouty arthritis gow' tē ar-thrī' tis	acute attacks of arthritis, usually in a single joint (especially the great toe), caused by hyperuricemia (an excessive level of uric acid in the blood)
bony necrosis bōn'ē nĕ-krō' sis sequestrum sē-kwes' trŭm	bone tissue that has died from loss of blood supply, such as can occur after a fracture (<i>sequestrum</i> = something laid aside)
bunion bŭn' yŭn	swelling of the joint at the base of the great toe caused by inflammation of the bursa

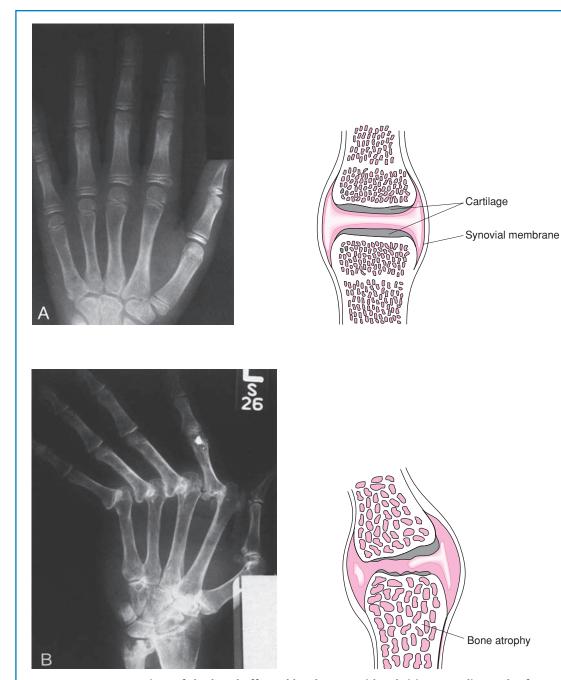


FIGURE 4-12 Joints of the hand affected by rheumatoid arthritis. A. Radiograph of a normal hand. B. Radiograph of a hand with rheumatoid arthritis.

TERM	MEANING
bursitis ber-sī'tis	inflammation of a bursa
chondromalacia kon' drō-mă-lā' shē-ă	softening of cartilage
epiphysitis e-pif-i-sī'tis	inflammation of the epiphyseal regions of the long bone

TERM	MEANING
fracture (Fx) (Fig. 4-13) frak'chūr	broken or cracked bone
closed fracture klōsd frak' chūr	broken bone with no open wound
open fracture ō' pen frak' chūr	compound fracture; broken bone with an open wound
simple fracture sim' pĕl frak' chūr	nondisplaced fracture with one fracture line that does not require extensive treatment to repair (e.g., hairline fracture, stress fracture, or a crack)
complex fracture kom'pleks frak'chūr	displaced fracture that requires manipulation or surgery to repair
fracture line frak' chūr līn	the line of the break in a broken bone (e.g., oblique, spiral, or transverse)
comminuted fracture kom' i-nyū-tĕd frak' chūr	broken in many small pieces
greenstick fracture grēn' stik frak' chūr	bending and incomplete break of a bone; most often seen in children
herniated disk hĕr'nē-ā-tĕd disk	protrusion of a degenerated or fragmented intervertebral disk so that the nucleus pulposus protrudes, causing compression on the nerve root (<i>see</i> Chapter 8, Fig. 8-8)
myeloma mī-ĕ-lō'mă	bone marrow tumor
myositis mī-ō-sī'tis	inflammation of muscle
myoma mī-ō' mă	muscle tumor
leiomyoma lī'ō-mī-ō' mă	smooth muscle tumor
leiomyosarcoma lī'ō-mī'ō-sar-kō' mă	malignant smooth muscle tumor
rhabdomyoma rab' dō-mī-ō' mă	skeletal muscle tumor
rhabdomyosarcoma rab' dō-mī'ō-sar-kō' mă	malignant skeletal muscle tumor
muscular dystrophy mŭs' kyū-lăr dis' trō-fē	a category of genetically transmitted diseases characterized by progressive atrophy of skeletal muscles; Duchenne type is most common
osteoma os-tē-ō' mă	bone tumor
osteosarcoma os' tē-ō-sar-kō' mă	type of malignant bone tumor
osteomalacia os' tē-ō-mă-lā' shē-ă	disease marked by softening of the bone caused by calcium and vitamin D deficiency

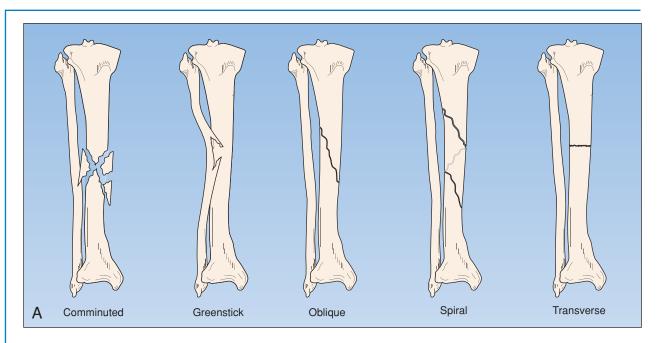
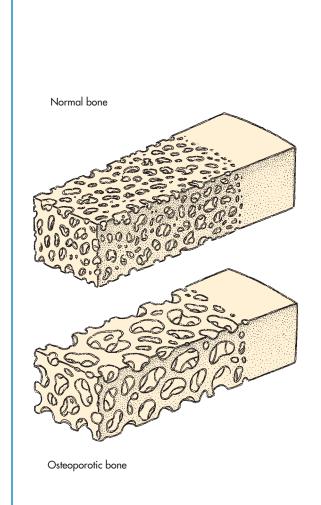


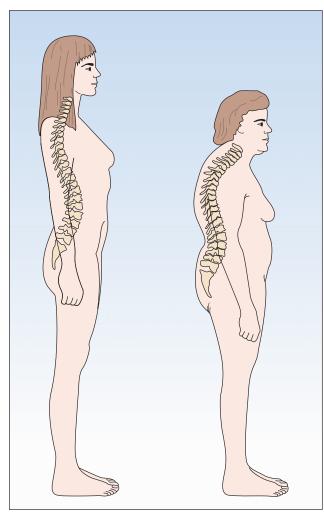




FIGURE 4-13 ■ A. Types of common fractures. B. Anterior-posterior radiograph of a lower leg demonstrating open fractures of the tibia and fibula (*arrows*). C. Lateral-view radiograph demonstrating a closed spiral fracture of the tibia (arrows).

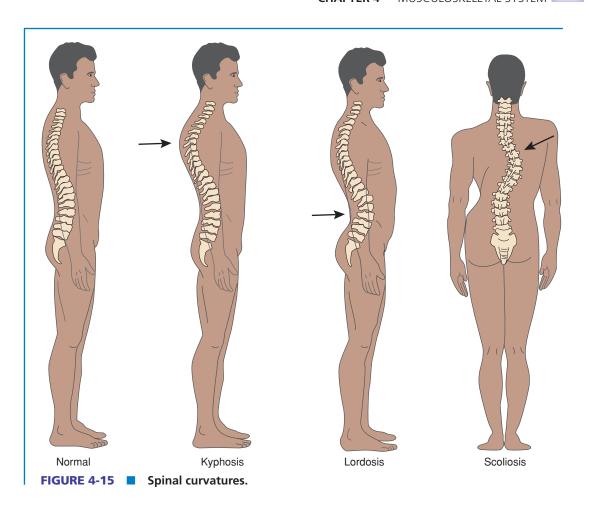
TERM	MEANING
rickets rik'ets	osteomalacia in children; causes bone deformity
osteomyelitis os' tē-ō-mī-ĕ-lī' tis	infection of bone and bone marrow, causing inflammation
osteoporosis (Fig. 4-14) os'tē-ō-pō-rō'sis	condition of decreased bone density and increased porosity, causing bones to become brittle and to fracture more easily (<i>porosis</i> = passage)
spinal curvatures (Fig. 4-15) spī'năl ker'vă-chūrz	curvatures of the spine (backbone) or spinal column (vertebral column)
kyphosis kī-fō'sis	abnormal posterior curvature of the thoracic spine (humped-back condition)





Normal spine in premenopausal woman

Spine compression and loss of height due to osteoporosis in postmenopausal woman



TERM	MEANING
lordosis lōr-dō'sis scoliosis (Fig 4-16)	abnormal anterior curvature of the lumbar spine (sway-back condition) abnormal lateral curvature of the spine (S-shaped curve)
skō-lē-ō' sis	
spondylolisthesis (Fig. 4-17) spon' di-lō-lis-thē' sis	forward slipping of a lumbar vertebra (listhesis = slipping)
spondylosis spon-di-lō' sis	stiff, immobile condition of vertebrae caused by joint degeneration
sprān	injury to a ligament caused by joint trauma but without joint dislocation or fracture
subluxation sŭb-lŭk-sā' shŭn	partial dislocation (luxation = dislocation)
tendinitis or tendonitis ten-di-nī'tis or ten-dŏ-nī'tis	inflammation of a tendon



FIGURE 4-16 Anterior-posterior thoracic spine radiograph demonstrating scoliosis.

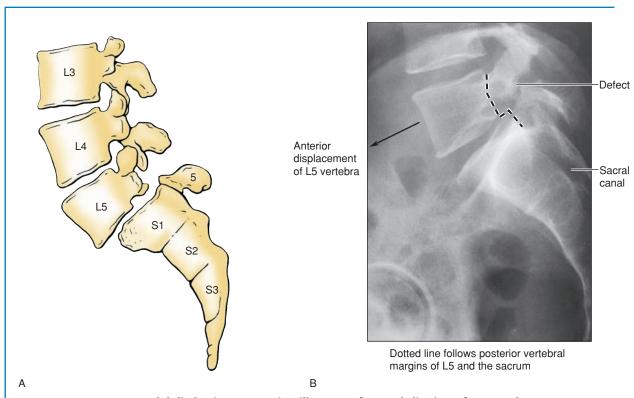


FIGURE 4-17 Spondylolisthesis. A. Drawing illustrates forward slipping of L5 vertebra. B. X-ray showing displacement.



Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
condition or increase ankylosis	4.54 Formed from the combining form for stiff and the suffix <i>-osis</i> , meaning, a stiff joint condition is called
inflammation arthritis osteoarthritis	4.55 Formed from the combining form for joint and the suffix <i>-itis</i> , meaning, the term for inflammation of joints characterized by pain and swelling is The most common form of arthritis, which is formed using the combining form for bone, is This is also called
joint rheumatoid, Gouty hyper	degenerative arthritis or degenerative disease. The most crippling type of arthritis, which is characterized by chronic systemic inflammation, is arthritis arthritis attacks a single joint (e.g., the great toe) because of too much uric acid in the blood, or uricemia.
-itis bursa epiphysitis muscle tendonitis or tendinitis bone marrow	4.56 Recall that the suffix refers to inflammation. Bursitis is inflammation of a Inflammation of the epiphyseal regions of a long bone is called Myositis is inflammation of a Inflammation of a tendon is called Osteomyelitis is an infection and inflammation of bone and
swelling	4.57 A bunion is a at the joint at the base of the great toe caused by inflammation of the bursa.
death condition, increase necrosis, sequestrum	4.58 The combining form <i>necr/o</i> means, and the suffix -osis means or The term for the condition or increase of dead bone tissue caused by a loss of blood supply is bony, which is also called
chrondr/o cartilage	4.59 Recall that the combining form for cartilage is The term chondromalacia refers to a softening of
fracture closed open simple	4.60 A broken bone, or, can happen in various ways. The skin is not broken in a fracture, whereas there is an open wound with an fracture. If the fracture has only one fracture line and the bones are not displaced, this is a fracture, whereas a displaced fracture that requires
complex, Fx	manipulation to put the bone pieces in correct position is a fracture. The abbreviation for fracture is

ANSWERS	REVIEW
comminuted greenstick	4.61 A fracture involving a bone that is broken in many small pieces is a fracture. An incomplete fracture, which usually is seen in children and is named for how a living tree branch may break when you bend it, is a fracture.
herniated	4.62 A degenerated or fragmented intervertebral disk that protrudes and compresses a nerve is called a disk.
myoma, osteoma bone marrow malignant	4.63 Recall that the suffix <i>-oma</i> means Using the combining forms for muscle and bone, a muscle tumor is a and a bone tumor is an A myeloma is a tumor of the An osteosarcoma is a type of bone tumor.
leiomyoma rhabdomyoma rhabdomyosarcoma	4.64 There are several types of muscle tumors. The suffix <i>-oma</i> refers to any tumor, but a sarcoma is a malignant tumor. Recall the meanings of the combining forms <i>lei/o</i> and <i>rhabd/o</i> . A smooth muscle tumor is a, whereas a skeletal muscle tumor is a A malignant smooth muscle tumor is a leiomyosarcoma, and a malignant skeletal muscle tumor is a
dystrophy shrinking painful or faulty	4.65 Muscular is a group of diseases that are characterized by progressive atrophy of skeletal muscles. Recall that atrophy means of muscle size, and the prefix dys- means
osteomalacia rickets	4.66 Recall that chondromalacia means softening of cartilage. The term for softening of bone is This is caused by a deficiency of calcium and vitamin D. In children, this is called
condition or increase osteoporosis	4.67 The suffix <i>-osis</i> means The condition in which bones become less dense and more porous is called
subluxation sprain	4.68 Joints can be injured by trauma in various ways. If the bones are partially dislocated from their usual position in a joint, this is called An injury to a ligament without a dislocation or fracture is called a

ANSWERS	REVIEW
	4.69 Several abnormal spinal curvatures are common. Kyphosis is
posterior	an abnormal curvature of the thoracic region. From
	the combining form meaning bent, an abnormal anterior curvature
lordosis	of the lumbar region is called From the combining
	form meaning twisted, an abnormal lateral curvature is called
scoliosis	·
vertebra	4.70 Recall that <i>spondyl/o</i> is the combining form for
	The term for a stiff, immobile condition of the vertebrae is
spondylosis	The term for forward slipping of lumbar
spondylolisthesis	vertebra is

Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
electromyogram (EMG) ē-lek-trō-mī'ō-gram	a neurodiagnostic, graphic record of the electrical activity of muscle both at rest and during contraction; used to diagnose neuromusculoskeletal disorders (e.g., muscular dystrophy); usually performed by a neurologist
magnetic resonance imaging (MRI) mag-net' ik rez'ō-nănts im'ă-jing	a nonionizing (no x-ray) imaging technique using magnetic fields and radiofrequency waves to visualize anatomic structures; useful in orthopedic studies to detect joint, tendon, and vertebral disk disorders (<i>see</i> MRI of knee in Chapter 2, Fig. 2-13)
nuclear medicine imaging nū'klē-ăr med'i-sin im'ă-jing radionuclide organ imaging rā'dē-ō-nū'klīd ōr'găn im'ă-jing bone scan	an ionizing imaging technique using radioactive isotopes a nuclear scan (radionuclide image) of bone tissue to detect
bōn skan	a tumor, malignancy, etc. (see Fig. 2-12B, whole body bone scan)
radiography rā' dē-og' ră-fē	an imaging modality using x-rays (ionizing radiation); commonly used in orthopedics to visualize the extremities, ribs, back, shoulders, and joints (<i>see</i> Fig. 2-10)
arthrogram ar' thrō-gram	a radiograph of a joint taken after the injection of a contrast medium

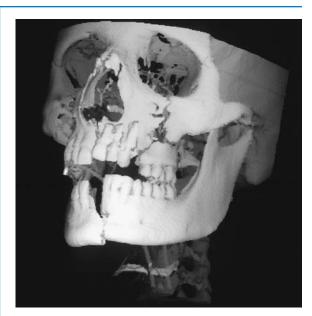


FIGURE 4-18 Three-dimensional computed tomographic reconstruction of a skull showing traumatic injury to facial bones suffered as the result of a motor vehicle accident.

TEST OR PROCEDURE	EXPLANATION
computed tomography (CT) (Fig. 4-18) kom-pyū' tĕd tō-mog' ră-fē computed axial tomography (CAT) kom-pyū' tĕd ak' sē-ăl tō-mog' ră-fē	a specialized x-ray procedure producing a series of cross- sectional images that are processed by a computer into a two-dimensional or three-dimensional image (<i>see</i> Fig. 2-11 for an explanation of the principles of CT technology)
sonography sŏ-nog'ră-fē	ultrasound imaging; a nonionizing technique that is useful in orthopedics to visualize muscles, ligaments, displacements, and dislocations or to guide a therapeutic intervention, such as that performed during arthroscopy

Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
	4.71 The combining form <i>electr/o</i> refers to electricity, and the
record	suffix -gram means a Join these word parts with the
	combining form for muscle to create the word for the diagnostic
electromyogram	record of the electrical activity of a muscle:
	4.72 The imaging technique using magnetic fields and radiofrequency
magnetic	waves to visualize bone and joint structures is called
resonance imaging	(MRI).

ANSWERS	REVIEW
process recording	4.73 The suffix <i>-graphy</i> refers to the of <i>Radi/o</i> is the combining term for radiation, from the Latin word for ray. The general imaging modality that records
radiography	images produced by x-rays is called Recall that the suffix <i>-gram</i> means a Using the combining form for joint, an x-ray of a joint, usually taken using a contrast
computed tomography, axial	medium, is an 4.74 A special imaging modality using an x-ray scanner and a computer to produce cross-sectional images is called (CT). This is also called computed tomography (CAT), because the scanner rotates around the axis of the body to make the image.
radionuclide bone scan	4.75 The Latin word nucleus refers to a little nut, or the inside of a thing. In modern physics, nucleus refers to the inside of an atom and radiation using subatomic particles. Nuclear medicine imaging, also called organ imaging, is a diagnostic technique using radioactive isotopes instead of x-rays. A is a nuclear scan of bone tissue to detect abnormalities.
sonography	4.76 The combining form meaning sound is <i>son/o</i> . The imaging modality using high-frequency sound (ultrasound) is called



Self-Instruction: Operative Terms

TERM	MEANING
amputation am-pyū-tā'shŭn	partial or complete removal of a limb (AKA = above-knee amputation; BKA = below-knee amputation)
arthrocentesis ar'thrō-sen-tē'sis	puncture for aspiration of a joint
arthrodesis ăr-thrō-dē' sĭs	binding or fusing of joint surfaces
arthroplasty ar'thrō-plas-tē	repair or reconstruction of a joint
arthroscopy (Fig. 4-19) ar-thros' kŏ-pē	procedure using an arthroscope to examine, diagnose, and repair a joint from within

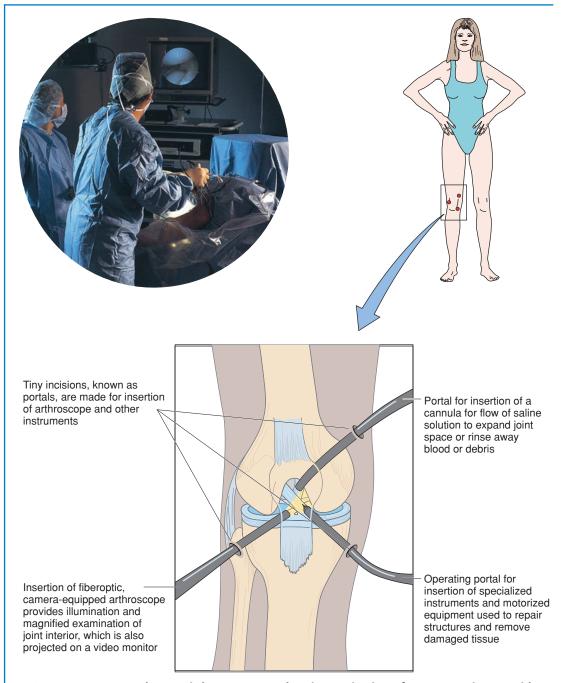


FIGURE 4-19 Arthroscopic knee surgery, showing projection of surgeon's view on video monitor.

TERM	MEANING
bone grafting bōn graft'ing	transplantation of a piece of bone from one site to another to repair a skeletal defect
bursectomy ber-sek' tō-mē	excision of a bursa
myoplasty mī'ō-plas-tē	repair of muscle



FIGURE 4-20 ■ Radiograph taken after open reduction, internal fixation (ORIF) of right ankle (see Medical Record 4-1).

TERM	MEANING
open reduction, internal fixation (ORIF) of a fracture (Fig. 4-20) o' pen rē-duk' shŭn, in-tĕr' năl fik-sā' shŭn of a frak' chūr	internal surgical repair of a fracture by bringing bones back into alignment and fixing them in place with devices such as plates, screws, and pins
osteoplasty os' tē-ō-plas-tē	repair of bone
osteotomy os-tē-ot'ŏ-mē	an incision into bone
spondylosyndesis spon'di-lō-sin-dē'sis	spinal fusion
tenotomy te-not'ŏ-mē	division of a tendon by incision to repair a deformity caused by shortening of a muscle



Programmed Review: Operative Terms

ANSWERS	REVIEW
joint arthrodesis -centesis arthrocentesis arthroscopy repair arthroplasty	4.77 Several different operative procedures are performed on joints. Often, the term for these procedures is formed using the combining form arthr/o, meaning Recall that the suffix -desis means binding; the term for binding or fusing of joint surfaces is therefore The suffix meaning a puncture for aspiration is; the term for puncture of a joint for aspiration is therefore The procedure using an instrument to examine a joint from within is called The suffix -plasty means surgical or reconstruction, and the repair or reconstruction of a joint is called
amputation	4.78 A partial or complete removal of a limb is an
excision or removal bursectomy	4.79 Recall that the suffix <i>-ectomy</i> means a surgical The excision of a bursa is therefore called a
grafting	4.80 Transplantation of a piece of bone from one site to another is called bone This is done, for example, to repair a skeletal defect.
-plasty myoplasty osteoplasty	4.81 The suffix for surgical repair or reconstruction is The repair of a muscle is therefore called The repair of a bone is called
incision osteotomy tenotomy	4.82 The suffix <i>-tomy</i> refers to a surgical An incision into bone is therefore called, and an incision into a tendon is called
binding spondylosyndesis	4.83 The suffix <i>-desis</i> means or fusing. From the combining form for vertebrae, the term for surgical spinal fusion is
open reduction, internal fixation	4.84 Some fractures, particularly comminuted fractures, must be surgically repaired by internal (open) surgery using devices such as screws and pins to hold the bone fragments in place. This procedure is called,(ORIF).



FIGURE 4-21 Short arm cast.

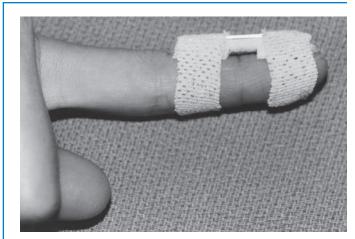


FIGURE 4-22 Finger splint.



Self-Instruction: Therapeutic Terms

TERM	MEANING
closed reduction, external fixation of a fracture klōsd rē-dŭk' shŭn, eks-tĕr' năl fik-sā' shŭn of a frak' chūr	external manipulation of a fracture to regain alignment along with application of an external device to protect and hold the bone in place while healing
casting (Fig. 4-21) kast'ing	use of a stiff, solid dressing around a limb or other body part to immobilize it during healing
splinting (Fig. 4-22) splint' ing	use of a rigid device to immobilize or restrain a broken bone or injured body part; provides less support than a cast, but can be adjusted more easily to accommodate swelling from an injury
traction (Тх) (Fig. 4-23) trak'shйn	application of a pulling force to a fractured bone or dislocated joint to maintain proper position during healing
closed reduction, percutaneous fixation of a fracture (Fig. 4-24) klōsd rē-dŭk'shŭn, pĕr-kyū-tā'nē-ŭs fik-sā'shŭn of a frak'chūr	external manipulation of a fracture to regain alignment, followed by insertion of one or more pins through the skin to maintain position; often includes use of an external device called a fixator to keep the fracture immobilized during healing
orthosis (Fig. 4-25) ōr-thō'sis	use of an orthopedic appliance to maintain a bone's position or to provide limb support (e.g., back, knee, or wrist brace)
physical therapy (PT) fiz'i-kăl thār'ă-pē	treatment to rehabilitate patients disabled by illness or injury; involves many different modalities (methods), such as exercise, hydrotherapy, diathermy, and ultrasound



FIGURE 4-23 Cervical traction.



FIGURE 4-24 Radiograph taken after closed reduction, percutaneous fixation of an open comminuted distal tibia/fibula fracture, showing placement of an external fixator to maintain pin placement during the healing process. The injury was the result of a gun shot to the lower extremity.

TERM	MEANING				
prosthesis (Fig. 4-26) pros' thē-sis	an artificial replacement for a missing body part or a device used to improve a body function, such as an artificial limb, hip, or joint				
COMMON THERAPEUTIC	DRUG CLASSIFICATIONS				
analgesic an-ăl-jē'zik	a drug that relieves pain				
narcotic nar-kot' ik	a potent analgesic with addictive properties				
antiinflammatory an' tē-in-flam' ă-tō-rē	a drug that reduces inflammation				
antipyretic an' tē-pī-ret' ik	a drug that relieves fever				
nonsteroidal antiinflammatory drug (NSAID) non-stēr-oy'dăl an' tē-in-flam'ă-tōr-ē drŭg	a group of drugs with analgesic, antiinflammatory, and antipyretic properties (e.g., ibuprofen and aspirin) commonly used to treat arthritis				



FIGURE 4-25 Examples of orthoses: back, knee, and wrist.

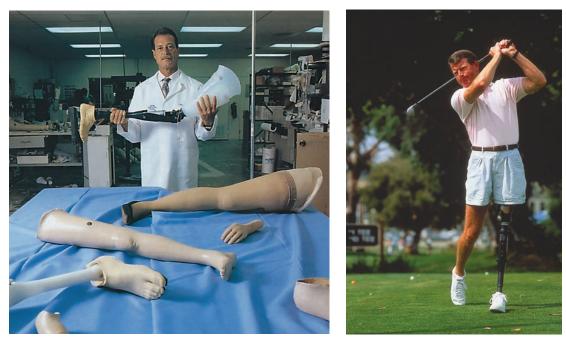


FIGURE 4-26 A. Prosthetist holding an above-the-knee prosthesis, with an array of prostheses on table in foreground. B. A prosthetic leg makes it possible for an above-the-knee amputee to lead an active life.



Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
closed reduction, external fixation percutaneous fixation	4.85 Recall that some fractures require open reduction, internal fixation (ORIF). Other fractures can be reduced (the bone pieces brought into alignment) without surgery and held in place externally. This procedure is called
r	4.86 With closed reduction, external fixation, the fractured bone
casting splinting	must be held immobile. The use of a stiff, solid dressing around a limb to immobilize it during healing is called The use of a rigid device to immobilize a limb with a fracture or injury that can be adjusted to accommodate swelling is called Sometimes, it is necessary to maintain a pulling force on a fractured bone or dislocated joint for proper positioning during healing; this is
traction	called
orthosis	4.87 The combining form <i>orth/o</i> means straight. An orthopedic device used to maintain limb support or the position of bones is called an
physical	4.88 Patients with musculoskeletal injuries or illnesses often receive rehabilitative therapy, called therapy (PT), that combines exercise and other modalities.
prosthesis	4.89 An artificial limb is an example of a
without analgesic narcotic	4.90 The prefix <i>an-</i> means The Greek word algesis means sensation of pain. A drug that relieves pain is an The combining form <i>narc/o</i> means to benumb or deaden; a type of potent, addictive analgesic drug is called a
	4.91 Many drugs are named according to their action against a
against	4.91 Many drugs are named according to their action against a condition or symptom. The prefix <i>anti-</i> means The Greek word pyr means heat or fire, and a drug that relieves fever is an
antipyretic antiinflammatory	A drug that reduces inflammation is an

ANSWERS	REVIEW				
	4.92 There are several types of analgesic and antiinflammatory				
	drugs. The group that includes aspirin and ibuprofen is called				
nonsteroidal antiinflammatory	drugs (NSAIDs).				

CHAPTER 4 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
A	anterior
AKA	above-knee amputation
AP	anterior-posterior
BKA	below-knee amputation
CAT	computed axial tomography
CT	computed tomography
DJD	degenerative joint disease
EMG	electromyogram
Fx	fracture
MRI	magnetic resonance imaging
NSAID	nonsteroidal antiinflammatory drug
OA	osteoarthritis
ORIF	open reduction, internal fixation
P	posterior
PA	posterior-anterior
PT	physical therapy
RA	rheumatoid arthritis
ROM	range of motion
Tx	traction

CHAPTER 4 SUMMARY OF TERMS

The terms introduced in chapter 4 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

abduction/161 ab-dŭk'shŭn	analgesic/182 an-ăl-jē'zik
adduction/161 ă-duk'shйn	anatomic or anatomical position/158 an-ăh-tom' ik or an-ăh-tom' ik-ăl pō-zī' shŭn
amputation/177 am-pyū-tā' shŭn	ankylosis/165 ang'ki-lō'sis

anterior (A)/158

an-tēr'ē-ŏr

anterior-posterior (AP)/159

an-tēr'ē-ŏr-pos-tēr'ē-ŏr

antiinflammatory/182

an' tē-in-flam'ă-tō-rē

antipyretic/182

an' tē-pī-ret' ik

appendicular skeleton/151

ap'en-dik'yū-lăr skel'ĕ-tŏn

arthralgia/164

ar-thral' jē-ă

arthritis/165

ar-thrī'tis

arthrocentesis/177

ar'thrō-sen-tē'sis

arthrodesis/177

ăr-thrō-dē'sĭs

arthrogram/175

ar'thrō-gram

arthroplasty/177

ar'thrō-plas-tē

arthroscopy/177

ar-thros' kŏ-pē

articular cartilage/154

ar-tik'yū-lăr kar'ti-lij

articulation/155

ar'tik-yū-lā'shŭn

atrophy/164

at'rō-fē

axial skeleton/151

ak' sē-ăl skel'ĕ-tŏn

axis/159

ak'sis

body planes/158

bod'ē plānz

bone/151

bōn

bone grafting/178

bon graft'ing

bone marrow/153

hōn ma' mō

bone scan/175

bōn skan

bony necrosis/166

bōn'ē nĕ-krō'sis

bunion/166

bŭn'yŭn

bursa/155

hŭr'să

bursectomy/178

ber-sek' tō-mē

bursitis/167

her-sī'tis

cancellous bone/152

kan' sĕ-lŭs bōn

cardiac muscle/156

kar' dē-ak mŭs'ĕl

casting/181

kast'ing

caudal/159

kaw'dăl

cephalic/159

se-fal'ik

chondromalacia/167

kon' drō-mă-lā' shē-ă

closed fracture/168

klösd frak' chūr

closed reduction, external fixation of a

fracture/181

klosd rē-dŭk'shŭn, eks-tĕr'năl fik-sā'shŭn of a

frak'chūr

closed reduction, percutaneous fixation

of a fracture/181

klōsd rē-dŭk'shŭn, per-kyū-tā'nē-ŭs fik-sā'shŭn

of a frak'chūr

comminuted fracture/168

kom'i-nyū-tĕd frak-chūr

compact bone/151

kom' pakt bōn

complex fracture/168

kom' pleks frak' chūr

computed axial tomography

(CAT)/176

kom-pyū' tĕd ak' sē-ăl tō-mog' ră-fē

computed tomography (CT)/176

kom-pyū' ted tō-mog' ră-fē

coronal plane/158

kōr'ŏ-năl plān

crepitation/164 krep-i-tā'shŭn crepitus/164 krep'i-tŭs decubitus/159 dē-kyū'bi-tŭs

degenerative arthritis/166 dē-jen'ĕr-ă-tiv ar-thrī'tis

degenerative joint disease (DJD)/166

dē-jen'ĕr-ă-tiv joynt di-zēz'

diaphysis/153 dī-af'i-sis

disk or disc/156

disk

distal/159 dis' tăl

dorsal/159 dōr'săl

dorsiflexion/161 dōr-si-flek'shŭn

electromyogram (EMG)/175

ē-lek-trō-mī'ō-gram endosteum/153 en-dos' tē-ŭm epiphysis/153

e-pif'i-sis epiphysitis/167 *e-pif-i-sī'tis* erect/159

ĕ-rĕkt'

eversion/161 ē-ver'zhŭn

exostosis/164 eks-os-tō'sis

extension/161 eks-ten'shun fascia/156 fash'ē-ă

flaccid/164 flas'ĭd

flat bones/152 flat bōnz

flexion/160 flek'shŭn

fracture (Fx)/168

frak' chūr

fracture line/168 frak' chūr līn

frontal plane/158

frŏn' tăl plān

goniometer/161 gō-nē-om'ĕ-ter

gouty arthritis/166 gow'tē ar-thrī'tis

greenstick fracture/168

grēn'stik frak'chūr

herniated disk/168 hĕr'nē-ā-tĕd disk

hypertrophy/164 hī-pĕr' trō-fē hypotonia/164 hī' pō-tō' nē-ă

inferior/159 in-fēr'ē-ŏr

insertion of a muscle/156

in-sĕr'shŭn of a mŭs'ĕl

inversion/161 in-vĕr'zhŭn

irregular bones/152 ir-reg'yū-lăr bōnz kyphosis/170 kī-fō'sis

lateral/159 lat' er-ăl

leiomyoma/168 lī'ō-mī-ō'mă

leiomyosarcoma/168 lī'ō-mī'o-sar-kō' mă

ligament/156 lig'ă-mĕnt

long bones/152

long bōnz

lordosis/171 lōr-dō'sis

magnetic resonance imaging (MRI)/175

mag-net' ik rez'ō-nănts im'ă-jing

medial/159 mē' dē-ăl

medullary cavity/153 med'ul-ăr-ē kav'i-tē

metaphysis/153

mĕ-taf'i-sis

muscle/156

mŭs'ĕl

muscular dystrophy/168

mŭs' ky ū-lăr dis' trō-fē

myalgia/164 mī-al'jē-ă

myeloma/168 mī-ĕ-lō'mă

myodynia/164 mī'ō-din'ē-ă

myoma/168 mī-ō' mă

myoplasty/178 mī'ō-plas-tē

myositis/168 mī-ō-sī' tis

narcotic/182 nar-kot'ik

nonsteroidal antiinflammatory drug (NSAID)/182

non-stēr-oy' dăl an' tē-in-flam'ă-tōr-ē drŭg

nuclear medicine imaging/175 nū'klē-ăr med'i-sin im'ă-jing

nucleus pulposus/156 nu'klē-ŭs pŭl-pō'sŭs

open fracture/168 ō' pen frak' chūr

open reduction, internal fixation (ORIF) of a fracture/179

ō' pen rē-dŭk' shŭn, in-tĕr' năl fik-sā' shŭn of a frak'chūr

origin of a muscle/156

ōr'i-jin of a mŭs'ĕl

orthosis/181 ōr-thō'sis

ostealgia/164 os-tē-al'jē-ă

osteoarthritis (OA)/166

os' tē-ō-ar-thrī' tis

osteodynia/164

os-tē-ō-din'ē-ă

osteoma/168

os' tē-ō' mă

osteomalacia/168

os' tē-ō-mă-lā' shē-ă

osteomyelitis/170 os' tē-ō-mī-ĕ-lī' tis

osteoplasty/179 os' tē-ō-plas-tē

osteoporosis/170 os' tē-ō-pō-rō' sis

osteosarcoma/168 os' tē-ō-sar-kō' mă osteotomy/179

os-tē-ot'ō-mē

periosteum/154 per-ē-os' tē-ŭm

physical therapy (PT)/181

fiz'i-kăl ther'ă-pē

plantar flexion/161 plan' tăr flek' shun

posterior (P)/159

pos-tēr'ē-ŏr

posterior-anterior (PA)/159

pos-tēr'ē-ŏr-an-tēr'ē-ŏr

pronation/161 prō-nā'shŭn

prone/159 prōn

prosthesis/182

pros' thē-sis

proximal/159 prok'si-măl

radiography/175 rā' dē-og' ră-fē

radionuclide organ imaging/175 rā' dē-ō-nū' klīd ōr' găn im'ă-jing

range of motion (ROM)/161

rānj of mō' shŭn

recumbent/159 rē-kŭm' hĕnt

red bone marrow/154 spondylolisthesis/171 red bon mar'o spon'di-lō-lis-thē'sis rhabdomyoma/168 spondylosis/171 rab'dō-mī-ō'mă spon-di-lō'sis spondylosyndesis/179 rhabdomyosarcoma/168 rab' dō-mī'ō-sar-kō' mă spon'di-lō-sin-dē'sis rheumatoid arthritis (RA)/166 spongy bone/152 rū'mă-toyd ar-thrī'tis spŏn' jē bōn rickets/170 sprain/171 rik'ets sprān rigidity/164 striated muscle/156 ri-jid'i-tē strī'ā-ted mŭs'ĕl rigor/164 subluxation/171 sŭb-lŭk-sā'shŭn rig'ŏr rotation/161 superior/159 rō-tā'shŭn sū-pēr'ē-ŏr sagittal plane/158 supination/161 saj'i-tăl plān sū'pi-nā'shŭn scoliosis/171 supine/159 skō-lē-ō'sis sū-pīn' sequestrum/166 synovial fluid/156 sē-kwes' trŭm si-nō'vē-ăl flū'id sesamoid bones/152 synovial membrane/156 si-nō' vē-ăl mem' brān ses'ă-moyd bōnz short bones/152 tendinitis or tendonitis/171 short bonz ten-di-nī' tis or ten-dŏ-nī' tis tendon/156 simple fracture/168 sĭm' pel frak' chūr ten'dŏn skeletal muscle/156 tenotomy/179 skel'e-tăl mŭs'ĕl te-not'ō-mē smooth muscle/156 tetany/164 smūth mŭs'ĕl tet'ă-nē sonography/176 traction (Tx)/181 sŏ-nog'ră-fĭ trak'shŭn spasm/164 transverse plane/158 trans-vĕrs' plān spazm spastic/164 tremor/164 trem'ŏr spas' tik spinal curvatures/170 ventral/158

ven' trăl

yel'ō bōn mar'ō

yellow bone marrow/154

spī'năl ker'vă-chūrz

splinting/181

splint' ing



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE:

hypertrophy $\frac{hyper}{P} \frac{troph}{R} \frac{y}{S}$

DEFINITION: above or excessive/nourishment or development/condition or process of

1.	hemipelvect	omy			
	p	/		/	
	•				J
	DEFINITION:				
2.	thoracic				
	R	. /			
0	DEFINITION:				
3.	myofascial	,		,	
	CF	. /	p	/_	S
	DEFINITION:				
1	arthropathy				
4.	- •	,		/	
	CF	. /	R	/	S
	DEFINITION:				
5	spondylolysi				
٠.					
	CF	′	S		
	DEFINITION:				
6.	osteogenic				
		/_		/_	
	CF		R		S
	DEFINITION:				
7.	chondrector	ny			
	R	/			
	DEFINITION:				
8.	myonecrosis	;			
	CF	/		/	
			R		S
	DEFINITION:				

9.	ostealgia					
	R	/	_			
	R	S				
	DEFINITION:				 	
10.	periosteitis					
	_	/	/			
	P	R	S	_		
	DEFINITION:				 	
11.	leiomyosarco	oma				
	·		/	/		
	CF	CF	R	/		
	DEFINITION:				 	
12.	myelocyte					
		/	/			
	CF	R	S			
	DEFINITION:				 	
13.	costovertebra	al				
		/	/			
	CF	/R	S	_		
	DEFINITION:_				 	
14.	spondylomal	acia				
			_			
	CF	S	-			
	DEFINITION:				 	
15.	osteoarthritis	;				
		/R	/			
	CF	R	S			
	DEFINITION:				 	
16.	intercostal					
		/ R	/			
	P	R	S			
	DEFINITION:				 	
17.	orthosis					
		/	_			
	R	S				
	DEFINITION:_					
18.	myotonia					
		/R	/			
	CF	R	S			
	DEEINITION:					

19	kyphosis				
_,.		/			
		S	•		
	DEFINITION:_			 	
20.	craniectomy				
		_			
	DEFINITION:_				
21.	arthrodesis				
			-		
	CF	S			
	DEFINITION:_			 	
22.	fibromyalgia				
	/		./S		
23.	rhabdomyom				
	/	/	./S		
24.	sternocostal				
	/	/ 	./S		
25					
25.	intraarticular		,		
	/	'R	./S		
	DEFINITION:		5		
26	syndactylism				
20.		1	/		
	<i>P</i>	R	s - '		
27.	lumbodynia				
	-	/			
		S			
	DEFINITION:_				
28.	cervicobrachi	al			
			/		
	CF	/R	S		
	DEFINITION: _				

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29.	arthroscopy		
	/_		
	91	Ü	
30.	lordosis		
	//	S	
	DEFINITION:		
V rite	e the correct me	dical term for e	ach of the following definitions:
31.			lateral curvature of the spine
32.			joint pain
33.			bone tumor
34.			muscle tumor
35.			grating sound made by the movement of broken bones
36.			bone pain
37.			x-ray of a joint
38.			plane that divides the body into right and left halves
39.			surgical reconstruction of bone
40.			plane that divides the body into front and back portions
41.			opposite of hypertrophy
42.			striated (skeletal) muscle tumor
43.			test to record muscle response to electrical stimulation
44.			smooth muscle tumor
45.			application of a pulling force to a fractured or dislocated joint to maintain proper position during healing
46.			flabby or relaxed muscle
47.			lying flat on the back
48.			bone marrow tumor
49.			arthritis caused by hyperuricemia
50.			horizontal plane that divides the body into superior and inferior portions
51.			turning the palm of the hand or sole of the foot downward or backward
52.			stiff joint condition
53.			a partial dislocation
54.			toward the beginning or origin of a structure
55.			lying face down and flat

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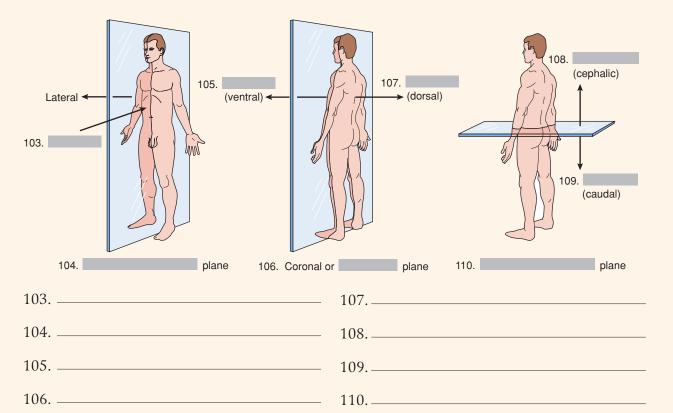
Write out the expanded term or meaning for each abbreviation:

86.	CT
87.	PT
88.	Tx
89.	ROM
90	Ev

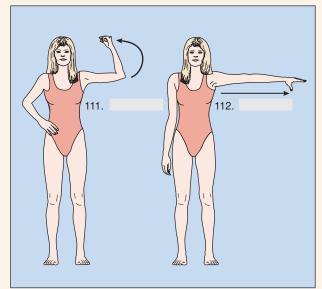
Circle the correct spelling:

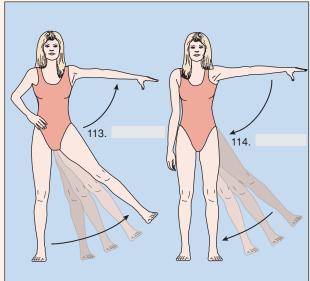
	91.	spondelosis	spandalosis	spondylosis
	92.	scholiosis	scoliosis	scoleosis
	93.	arthrodynia	arthradynia	arthrodenia
	94.	osteoalgia	ostealgia	osstealgia
	95.	sagital	saggittal	sagittal
	96.	flaccid	flacid	flascid
	97	sekquestrum	sequestrom	sequestrum
	11.	scrquestrum	sequestrom	sequestrum
		anklylosis	ankylosis	anklosis
	98.	_	1	•
1	98. 99.	anklylosis	ankylosis	anklosis
	98. 99. 100.	anklylosis chondral	ankylosis chrondral	anklosis chondrel
1	98. 99. 100. 101.	anklylosis chondral dorsaflexion	ankylosis chrondral dorsiflexion	anklosis chondrel dorsflexion

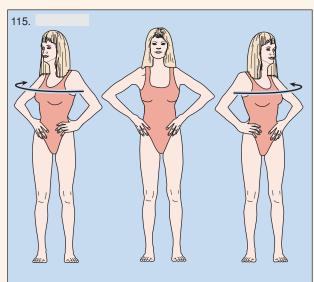
Identify the planes of the body by writing the missing words in the spaces provided:

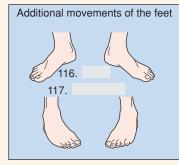


Identify the movements of the body by writing the missing words in the spaces provided:

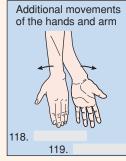


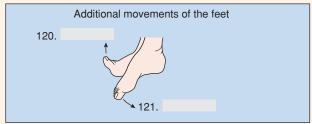






121. -



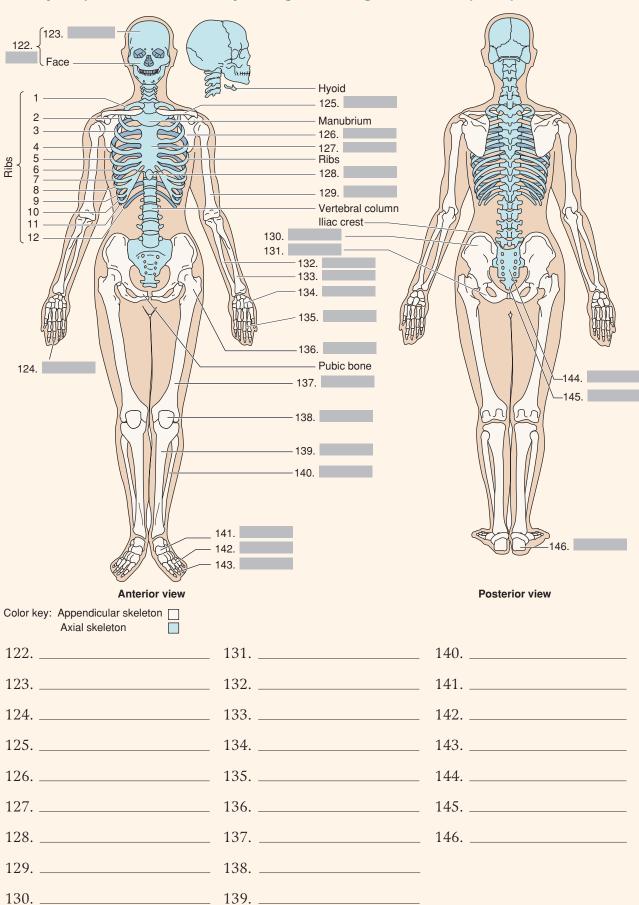


111		
112		
113		
444		
114		
115		
113		

116. _

117	
118	
119	
120	

Identify the parts of the skeleton by writing the missing words in the spaces provided:



Circle the combining form that corresponds to the meaning given:

147. cartilage	crani/o	cost/o	chondr/o
148. vertebra	myel/o	spondyl/o	lumb/o
149. bone marrow	my/o	myel/o	muscul/o
150. neck	thorac/o	crani/o	cervic/o
151. joint	oste/o	arthr/o	ankyl/o
152. chest	thorac/o	cervic/o	spondyl/o
153. muscle	my/o	myel/o	lei/o
154. rib	stern/o	chondr/o	cost/o

Give the noun that is used to form each adjective:

155.	orthotic	
156.	hypertrophic	·
157.	radial	
158.	kyphotic	
159.	bursal	
160.	dystrophic	
161.	necrotic	
162.	osteoporotic	
163.	lordotic	
164	ulnar	
165.	scoliotic	
166.	prosthetic	



MEDICAL RECORD ANALYSIS

Medical Record 4-1

HISTORY AND PHYSICAL EXAMINATION

CC: "attacks" of right knee discomfort and instability

This 19 y/o ♂ presents with "attacks" of right knee pain and instability. Three years HPI: ago, while playing basketball, he turned sharply and felt his kneecap pop in and out. It was acutely swollen and painful and required manipulation to reduce it. He had a course of PT and did reasonably well for a few months until resuming athletic activities. Since then, he has had recurrent episodes of the knee slipping in and out, all

related to twisting and turning while surfing and playing basketball. His primary complaint is the episodic discomfort and the inability to trust the knee. He is asympto-

matic at this time.

PMH: NKDA. Hx of right ankle Fx in 20xx. Meds: none. Operations: none.

SH: Alcohol rarely used. FH: Father, age 49, Mother, age 43, both L&W.

ROS: Noncontributory.

PE: The patient is a cooperative male in NAD.

VS: T 97.2° F, P 64, R 14, BP 118/66

HEENT: WNL. Neck: supple, no tenderness, full ROM, no adenopathy.

Lungs, heart, abdomen: WNL. Back: no tenderness or deformity.

Extremities: unremarkable except for involved knee. Knee ROM is 0-45 degrees equally. There is no parapatellar tenderness.

Neurologic: Negative.

Radiographs show subluxation of the right knee.

IMP: RECURRENT RIGHT KNEE PATELLAR INSTABILITY

RECOMMENDATION: Patelloplasty is being discussed, and the risks and benefits of the procedure have been explained. The patient will return with his parents for further consultation before deciding whether to proceed with treatment.

OUESTIONS ABOUT MEDICAL RECORD 4-1

- 1. Which describes the patient's symptoms at the time of the initial injury?
 - a. severe pain over a short course
 - b. pain that comes and goes
 - c. pain that progressively gets worse
 - d. pain that develops slowly over time
 - e. no pain
- 2. What treatment was provided 3 years ago?
 - a. puncture for aspiration of a joint
 - b. transplantation of a piece of bone from one site to another

- c. examination of a joint from within
- d. physical rehabilitation including exercise
- e. binding or fusing joint surfaces
- 3. Which best describes the patient's symptoms at the time of this visit?
 - a. severe pain
 - b. moderate pain
 - c. progressive pain
 - d. mild pain
 - e. no pain

- 4. Describe the orthopedic condition noted in the past history:
 - a. forward slipping of a vertebra
 - b. broken bone
 - c. arthritis
 - d. bone pain
 - e. dislocation
- 5. What does full ROM indicate?
 - a. swelling
 - b. spasm
 - c. inflammation
 - d. bruising
 - e. mobility

- 6. What did the radiographs indicate?
 - a. no radiographs were mentioned
 - b. patellar instability
 - c. partial dislocation
 - d. inflammation
 - e. joint stiffness
- 7. What treatment did the physician recommend?
 - a. surgical reconstruction of the kneecap
 - b. physical therapy
 - c. surgical repair of bone
 - d. excision of the patella
 - e. examination and repair of a joint from within using an endoscope

Medical Record 4-2

FOR ADDITIONAL STUDY

As Alice Toohey was playing with her young granddaughter, she stepped on a toy dump truck and fell down her porch steps, wrenching her ankle violently. Because of the sharp pain and immediate swelling, Ms. Toohey was taken immediately to the hospital. After being seen by the emergency room physician, she was admitted and scheduled for surgery. Medical Record 4-2 is the operative report dictated by the surgeon, Dr. Ricardo Rodriguez, immediately after the operation and processed by a medical transcriptionist.

Read Medical Record 4-2 (page 203), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 4-2

1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each term where it appears in the record, and define the term below. malleolus
	oblique
	sterile
2.	In your own words, not using medical terminology, briefly describe the preoperative diagnosis for Ms. Toohey:
3.	Put the following operative steps in correct order by numbering them from 1 to 10:
	radiograph of the screws that were too long
	incision on the outer side of the ankle
	plate placed onto fibula
	sewing the incisions
	radiograph of satisfactory screw position
	towel clip positioned
	removal of medial hematoma
	removal of lateral hematoma
	placement of screw into lower tibia
	incision on the inner side of the right ankle
4.	In this operation, the surgeon redid one step after using a diagnostic procedure to check whether that step was as effective as possible. In your own words, explain what Dr. Rodriguez changed and why:

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Medical Record 4-2

FOR ADDITIONAL STUDY

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

OPERATIVE REPORT

PREOPERATIVE DIAGNOSIS: Trimalleolar fracture, right ankle/fracture dislocation.

Trimalleolar fracture, right ankle/fracture dislocation. **POSTOPERATIVE DIAGNOSIS:**

OPERATION PERFORMED: Open reduction and internal fixation of medial malleolus and lateral

malleolus, right ankle.

ANESTHESIOLOGIST: K. Teglam, M.D.

ANESTHESIA: General

DESCRIPTION OF OPERATION: After successful general anesthesia, the right lower extremity was prepped and draped in a sterile fashion. A pneumatic tourniquet was used in the case at 300 mm Hg (mercury) for 51 minutes. The medial side was opened first; the skin was incised, and this was carried down through the subcutaneous tissue down to the periosteum which was incised enough at the fracture site for visualization of a large transverse medial malleolar fracture. A hematoma was evacuated by curettage and irrigation. Unfortunately, there was some debris within the joint which was articular cartilage destruction and damage on the talus

Attention was then directed laterally where an incision was made and carried through the skin and subcutaneous tissue. The fracture was brought into full view very easily. The fracture was long and oblique. This was curetted of hematoma and irrigated, and using a bone clamp, it was clamped in a reduced position. A 6-hole semitubular fibular-type plate was then bent to position and placed onto the fibula; and after predrilling, premeasuring, and pretapping, six cortical 3.5 mm diameter screws were used to hold the plate to the fractured fibula.

Attention was then directed medially. The fracture was reduced and held in place with a towel clip, and a 60 mm long malleolar screw was then inserted into the fragment into the distal tibia. X-rays revealed that three of the screws laterally were too long, and these were changed. The medial malleolus screw was also tightened down further. Repeat film revealed very satisfactory position of all the screws. The posterior malleolar fragment was felt to be adequately positioned. All the wounds were then irrigated with goodly amounts of antibiotic solution. Vicryl sutures, 0 and 2-0, were used to close the subcutaneous tissue on both sides; and staples were used for the skin. A bulky Jones dressing was applied with splints anteriorly and posteriorly.

The patient tolerated the procedure well and was transferred to the recovery room with stable vital signs.

RR:mb

D: 10/19/20xxT: 10/20/20xx

OPERATIVE REPORT

PT. NAME: TOOHEY, ALICE M.

ID NO: IP-236701

ROOM NO: 729

ATT. PHYS: R. RODRIGUEZ, M.D.

ANSWERS TO PRACTICE EXERCISES

- 1. hemi / pelv/ ectomy Р R half/pelvis (basin) or hip bone/excision (removal)
- 2. thorac, ic chest/pertaining to
- 3. myo_/ fasci_/ al CF muscle/fascia (a band)/pertaining to
- 4. arthro / path / y CF R S joint/disease/condition or process of
- 5. spondylo_/ lysis vertebra/breaking down or dissolution
- 6. osteo/ gen/ ic R S bone/origin or production/ pertaining to
- 7. chondr / ectomy R cartilage/excision (removal)
- 8. myo/necr/osis CF R S muscle/death/condition or increase
- 9. oste / algia R bone/pain
- 10. peri / oste / itis around/bone/ inflammation
- 11. leio/ myo / sarc/ oma CF CF R smooth/muscle/flesh/ tumor
- 12. my<u>elo / cyt / e</u> bone marrow or spinal cord/cell/noun marker

- 13. costo / vertebr/ al CF R rib/vertebra/ pertaining to
- 14. spondylo /malacia CF vertebra/softening
- 15. osteo / arthr / itis CF bone/joint/inflammation
- 16. inter / cost / al P R between/rib/pertaining
- 17. orth, osis R S straight, normal, or correct/condition or increase
- 18. myo / ton / ia CF R S muscle/tone/condition of
- 19. kyph / osis S humped-back/condition or increase
- 20. crani / ectomy skull/excision (removal)
- 21. arthro / desis joint/binding
- 22. fibro/ my/algia CF R fiber/muscle/pain
- 23. rhabdo / my / oma rod-shaped or striated (skeletal)/muscle/tumor
- 24. sterno / cost / al CF R sternum (breastbone)/rib/ pertaining to

- 25. intra / articul / ar within/joint/ pertaining to
- 26. syndactylism syn / dactyl / ism R S together or with/digit (finger or toe)/ condition of
- 27. lumbo, dynia loin (lower back)/pain
- 28. cervico / brachi / al CF R neck/arm/pertaining to
- 29. arthro / scopy CF joint/process of examination
- 30. lord / osis bent/condition or increase
- 31. scoliosis
- 32. arthralgia or arthrodynia
- 33. osteoma
- 34. myoma
- 35. crepitation or crepitus
- 36. ostealgia or osteodynia
- 37. arthrogram
- 38. sagittal
- 39. osteoplasty
- 40. coronal or frontal
- 41. atrophy
- 42. rhabdomyoma
- 43. electromyogram
- 44. leiomyoma
- 45. traction
- 46. flaccid
- 47. horizontal recumbent or supine
- 48. myeloma
- 49. gouty arthritis
- 50. transverse
- 51. pronation
- 52. ankylosis
- 53. subluxation

54. proximal	91. spondylosis	130. ilium
55. prone	92. scoliosis	131. ischium
56. prosthesis	93. arthrodynia	132. ulna
57. bone scan	94. ostealgia	133. radius
58. superior or cephalic	95. sagittal	134. carpals
59. dorsiflexion	96. flaccid	135. metacarpals
60. open reduction, internal	97. sequestrum	136. trochanter
fixation (ORIF) of a	98. ankylosis	137. femur
fracture	99. chondral	138. patella
61. rickets	100. dorsiflexion	139. tibia
62. sonography	101. osteoporosis	140. fibula
63. radiologist	102. rhabdomyoma	141. tarsals
64. rigor or rigidity	103. medial	142. metatarsals
65. intercostal	104. sagittal	143. phalanges
66. rhabdomyosarcoma	105. anterior	144. sacrum
67. hypertrophy	106. frontal	145. соссух
68. myorrhaphy	107. posterior	146. calcaneus
69. spondylosyndesis	108 superior	147. chondr/o
70. leiomyoma	109. inferior	148. spondyl/o
71. osteomalacia	110. transverse	149. myel/o
72. spondylolisthesis	111. flexion	150. cervic/o
73. arthrogram	112. extension	151. arthr/o
74. osteotomy	113. abduction	152. thorac/o
75. epiphysitis	114. adduction	153. my/o
76. cervical	115. rotation	154. cost/o
77. bony necrosis	116. eversion	155. orthosis
78. chondroma	117. inversion	156. hypertrophy
79. arthrocentesis	118. pronation	157. radius
80. c	119. supination	158. kyphosis
81. d	120 dorsiflexion	159. bursa
82. a	121. plantar flexion	160. dystrophy
83. b	122. skull	161. necrosis
84. f	123. cranium	162. osteoporosis
85. e	124. phalanges	163. lordosis
86. computed tomography	125. clavicle	164. ulna
87. physical therapy	126. scapula	165. scoliosis
88. traction or treatment	127. sternum	166. prosthesis
89. range of motion	128. xiphoid process	•
90. fracture (broken bone)	129. humerus	
,		

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 4-1: History and Physical Examination

5. e 6. c 2. d 3. e 4. b 1. a 7. a

Medical Record 4-2: For Additional Study

See CD-ROM for answers.





CHAPTER

5

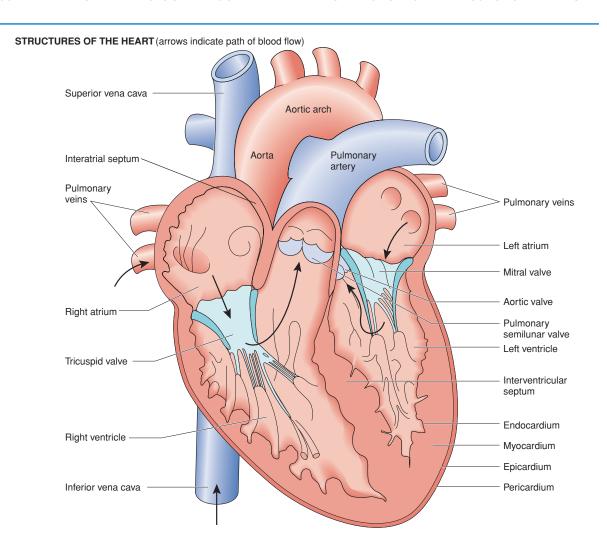
Cardiovascular System

✓ Chapter 5 Checklist	LOCATION
☐ Read Chapter 5: Cardiovascular System and complete all programmed review segments.	pages 207-250
$\hfill\square$ Review the starter set of flash cards and term components related to Chapter 5.	back of book
☐ Complete the Chapter 5 Practice Exercises and Medical Record Analysis 5-1.	pages 256-262
☐ Complete Medical Record Analysis 5-2 For Additional Study.	pages 263-264
☐ Complete the Chapter 5 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 5 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 5 terms.	CD-ROM

CARDIOVASCULAR SYSTEM OVERVIEW

The cardiovascular system consists of the heart (Fig. 5-1) and blood vessels, which work together to transport blood throughout the body.

- The heart is a muscular organ that pumps blood throughout the body.
- The heart consists of four chambers: the **right atrium** and **left atrium** (upper chambers), and the **right ventricle** and **left ventricle** (lower chambers).
- The heart is divided into right and left portions by the **interatrial septum** and the **interventricular septum**.
- 🌞 Heart valves open and close to maintain the one-way flow of blood through the heart.
- The heart has three layers: the **endocardium**, which lines the interior cavities of the heart; the **myocardium**, which is the thick, muscular layer; and the **epicardium**, which is the outer membrane.
- Enclosing the heart is a loose, protective sac called the **pericardium**.



ECHOCARDIOGRAM Normal, two-dimensional, apical four-chamber view

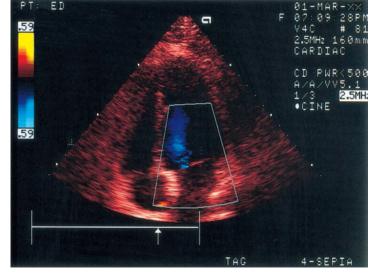
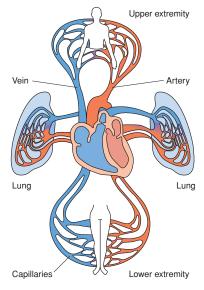


FIGURE 5-1 Structures of the heart.

BLOOD CIRCULATION



Blood, which transports essential elements within the body, flows through the heart as follows:

- **Deoxygenated** blood from the body enters the heart through the **superior vena cava** and **inferior vena cava** into the right atrium.
- puring atrial contraction, the tricuspid valve opens to allow blood to flow into the right ventricle.
- Contraction of the ventricle pushes blood through the pulmonary semilunar valve into the pulmonary artery.
- The **pulmonary artery** carries the blood to the lungs and through the **pulmonary circulation** (a network of arteries, capillaries, air sacs, and veins in the lung), where it is oxygenated.
- Oxygenated blood returns to the heart via the **pulmonary veins** into the left atrium.
- With atrial contraction, the mitral (or bicuspid) valve opens to allow blood to flow into the left ventricle.
- Contraction of the left ventricle pushes blood through the aortic valve into the aorta and on to all parts of the body through the **systemic circulation** (a network of arteries, arterioles, capillaries, and veins throughout the body).
- The heart is the first to receive oxygenated blood via the right and left coronary arteries, which distribute blood throughout the entire heart (Fig. 5-2).



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
angi/o, vas/o, vascul/o	vessel
aort/o	aorta
arteri/o	artery
ather/o	fatty (lipid) paste
atri/o	atrium
cardi/o	heart
coron/o	circle or crown
my/o	muscle
pector/o, steth/o	chest
sphygm/o	pulse
thromb/o	clot
ven/o, phleb/o	vein
varic/o	swollen, twisted vein
ventricul/o	ventricle (belly or pouch)

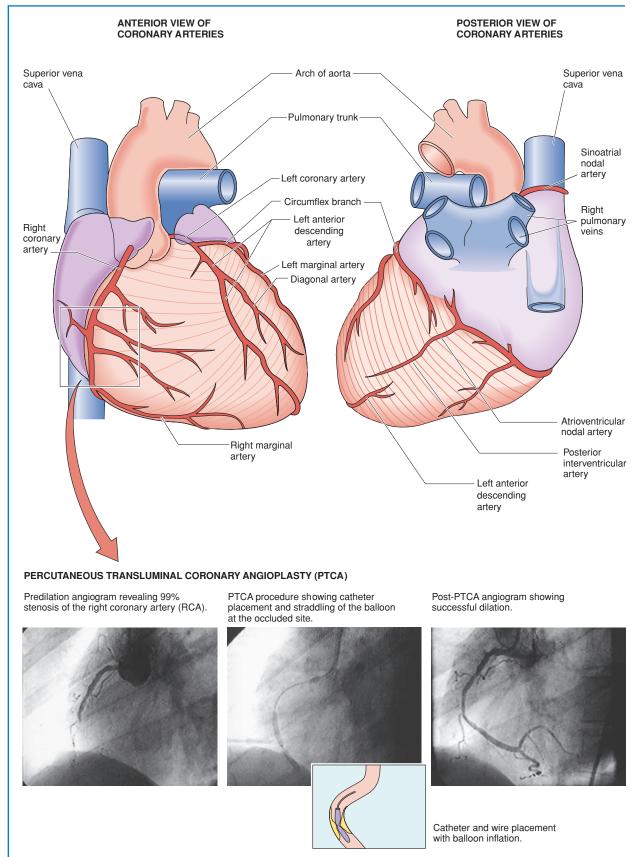


FIGURE 5-2 Coronary arteries and angiograms illustrating angioplasty.



Programmed Review: Combining Forms

ANSWERS	REVIEW
heart	5.1 A cardiologist is a physician who specializes in the study of the
angiogram	5.2 Formed from <i>angi/o</i> , an is an x-ray record of a blood vessel.
vessel	5.3 A vasospasm is an involuntary contraction of a blood
Cardiology	5.4 is the medical specialty dealing with the study of the heart.
Thromb/o breaking down or dissolution	5.5 , the combining form meaning clot, is the subject of thrombolysis, a term referring to the of a clot or clots.
ventricle ventricul/o cardiologist	5.6 Someone with a congenital ventricular defect is born with an imperfection of a in the heart. (The combining form in this term is) That person would likely be under the care of a
fatty or lipid paste	5.7 Atherosclerosis is a condition in which hardened builds up inside blood vessels.
veins phleb/o, vein	5.8 A phlebotomist is someone trained to draw blood samples from the This term comes from the combining form, meaning
varic/o	5.9 Varicose veins, from the combining form, are so named because they are swollen and twisted.
ven/o arteries	5.10 Veins (named from the combining form) return blood to the heart from all around the body. Based on the root <i>arteri/o</i> , carry blood in the other direction (from the heart to the body or lungs).
pector/o steth/o	5.11 The heart is located in the chest, behind the area of the pectoral muscle. The pectoral muscles get their name from the combining form, which means chest. Another combining form that means chest is, which is the subject of the term stethoscope, an instrument used to listen to the heart or to breathing within the chest.

ANSWERS	REVIEW
atria atri/o ventricul/o	5.12 The heart has four chambers: two ventricles and two, which is the plural form of atrium. Atrium comes from the combining form, and ventricle comes from the combining form
myocardium circle or crown coronary	blood vessel through which blood leaves the heart for delivery to all parts of the body. The coronary arteries branch from the aorta and supply the heart's muscular tissue, or the, with blood. The original meaning of coron/o refers to a The arteries are so named because they seem to encircle the heart like a crown.
sphygm/o	5.14 Each beat of the heart produces a pulse. The combining form that means pulse is This is the key combining form in the term sphygmomanometer, an instrument that measures blood pressure (BP) based on its pressurized pulse through an artery.
veins	Arteries and are the two types of larger blood vessels. Along with the capillaries, they are sometimes referred to collectively as the
vascul/o	vasculature, from the combining form, meaning vessel.



Self-Instruction: Anatomic Terms

Study the following:

TERM	MEANING
SEPTA AND LAYERS OF THE HEART (see Fig. 5-1)	
atrium ā' trē-ŭm	upper right or left chamber of the heart
endocardium en-dō-kar' dē-ŭm	membrane lining the cavities of the heart
epicardium ep-i-kar' dē-ŭm	membrane forming the outer layer of the heart
interatrial septum in-tĕr-ā' trē-ăl sep' tŭm	partition between the right and left atria
interventricular septum in-těr-ven-trik' yū-lăr sep' tŭm	partition between the right and left ventricles

TERM	MEANING
myocardium mī'ō-kar' dē-ŭm	heart muscle
pericardium per-i-kar' dē-ŭm	protective sac enclosing the heart composed of two layers with fluid between
visceral pericardium vis'ĕr-ăl per-i-kar' dē-ŭm	layer closest to the heart (visceral = pertaining to organ)
parietal pericardium pă-rī'ĕ-tăl per-i-kar'dē-ŭm	outer layer (parietal = pertaining to wall)
pericardial cavity per-i-kar'dē-ăl kav'i-tē	fluid-filled cavity between the pericardial layers
ventricle ven' tri-kĕl	lower right or left chamber of the heart

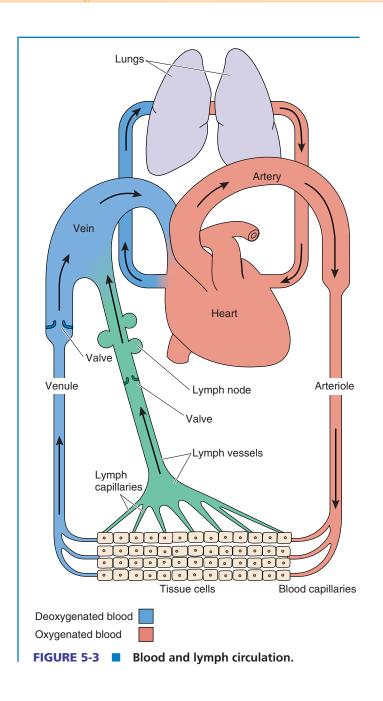
VALVES OF THE HEART AND VEINS (see Fig. 5-1)

heart valves hart valvz	structures within the heart that open and close with the heartbeat to regulate the one-way flow of blood
aortic valve ā-ōr' tik valv	heart valve between the left ventricle and the aorta
mitral valve mī' trăl valv bicuspid valve bī-kŭs' pid valv	heart valve between the left atrium and the left ventricle (cuspis = point)
pulmonary semilunar valve pul'mō-nār-ē sem-ē-lū'năr valv	heart valve opening from the right ventricle to the pulmonary artery (<i>luna</i> = moon)
tricuspid valve trī-kŭs' pid valv	valve between the right atrium and the right ventricle
valves of the veins valvz of the vānz	valves located at intervals within the lining of veins, especially in the legs, which constrict with muscle action to move the blood returning to the heart

BLOOD VESSELS (Fig. 5-3)

arteries (Fig. 5-4) ar' tĕr-ēz	vessels that carry blood from the heart to the arterioles
aorta ā-ōr' tă	large artery that is the main trunk of the arterial system branching from the left ventricle
arterioles ar-tēr'ē-ōlz	small vessels that receive blood from the arteries
capillaries kap'i-lār-ēz	tiny vessels that join arterioles and venules
venules ven'ūlz	small vessels that gather blood from the capillaries into the veins
veins (Fig. 5-5) vānz	vessels that carry blood to the heart from the venules

TERM	MEANING
CIRCULATION	
systemic circulation sis-tem' ik sĭr-kyū-lā' shŭn	circulation of blood throughout the body via arteries, arterioles, capillaries, venules, and veins to deliver oxygen and nutrients to body tissues
coronary circulation kōr'ŏ-nār-ē sĭr-kyū-lā' shŭn	circulation of blood through the coronary blood vessels to deliver oxygen and nutrients to the heart muscle tissue (see Fig. 5-2)
pulmonary circulation pul'mō-nār-ē sĭr-kyū-lā'shŭn	circulation of blood from the pulmonary artery through the vessels in the lungs and back to the heart via the pulmonary vein, providing for the exchange of gases



ARTERIAL BLOOD CIRCULATION

Arteries (carry blood from the heart)

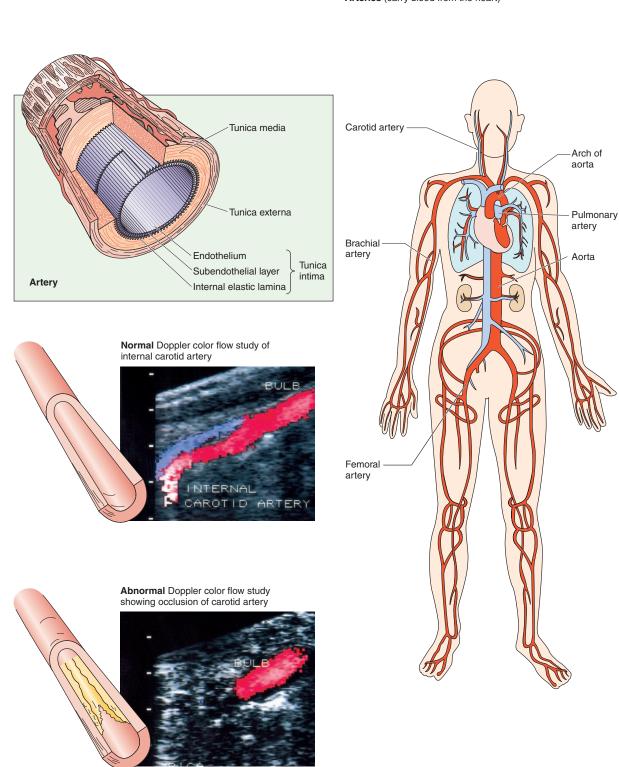
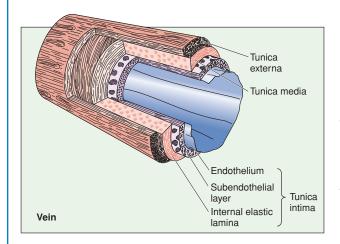
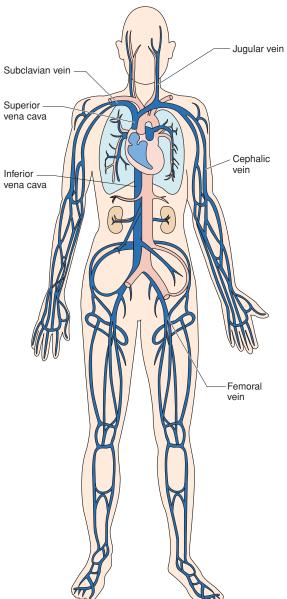


FIGURE 5-4 Arteries.

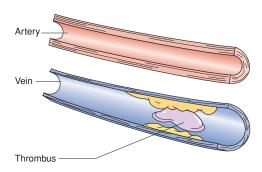
VENOUS CIRCULATION

Veins (carry blood to the heart)





FEMORAL THROMBUS



Color flow Doppler showing femoral vein thrombus

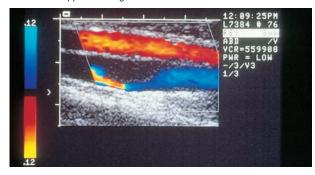


FIGURE 5-5 Veins.



Programmed Review: Anatomic Terms

ANSWERS	REVIEW
atri/o atria upper	5.15 The term atrium is from the combining form The plural form of this word is The right and left atria are the chambers of the heart.
within heart tissue -ium	5.16 Recall that the prefix <i>endo-</i> means Combined with <i>cardi/o</i> , it refers to something within the The endocardium is the structure or that lines the cavities of the heart. The suffix denoting structure or tissue is
epi- suffix structure, tissue	5.17 A common prefix that means upon is Combined with <i>cardi/o</i> and the <i>-ium</i> , it forms the term epicardium, which is the or forming the outer layer of the heart.
muscle myocardium	5.18 <i>My</i> /o is a combining form meaning The term for heart muscle tissue is
around heart pericardium pericardial	5.19 <i>Peri-</i> is a prefix that means The pericardium is a protective sac that encloses the It has two layers with fluid between. Using the term that means pertaining to organ, the layer closest to the heart is called the visceral pericardium. The outer layer uses the term that means pertaining to wall and is called the parietal Using the term that means pertaining to the pericardium, the fluid-filled space between these two layers is called the cavity.
ventricul/o lower	5.20 The ventricles of the heart are so named from the combining form, meaning belly or pouch. The ventricles are the two chambers of the heart.
between atria interventricular chambers	5.21 The term septum refers to an anatomic partition. The interatrial septum is the partition the left and right Between the left and right ventricles is the septum. The two atria and two ventricles are the four of the heart.



Self-Instruction: Blood Pressure Terms

Study the following:

TERM	MEANING
diastole dī-as' tō-lē	to expand; period during the cardiac cycle when blood enters the relaxed ventricles from the atria
systole sis' tō-lē	to contract; period during the cardiac cycle when the heart is in contraction and blood is ejected through the aorta and the pulmonary artery
normotension nōr-mō-ten' shŭn	normal blood pressure
hypotension <i>hī' pō-ten' shŭn</i>	low blood pressure
hypertension (HTN) <i>hī' pĕr-ten' shŭn</i>	high blood pressure



Programmed Review: Blood Pressure Terms

ANSWERS	REVIEW
BP	5.30 Blood pressure, which is abbreviated as, is a
	measurement of the pressure on the walls of the arteries during
systole, diastole	contraction () and relaxation () of
	the heart (Fig. 5-6).



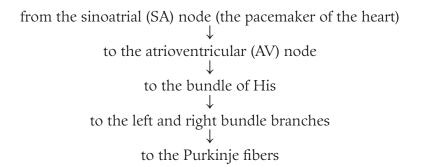
FIGURE 5-6 Blood pressure determination.

ANSWERS	REVIEW
blood pressure	5.31 When BP, or, is recorded, the
systole	contraction phase, or, is written first, followed by a
diastole	slash, followed by the relaxation phase, or The
suffix, pertaining	ic is used to modify the terms to mean
to	The term that means pertaining to the contraction phase is
systolic	, and the term that means pertaining to the relaxation
diastolic	phase is
	5.32 A blood pressure of 120/80 or below is considered to be a
normo	normal blood pressure and is termedtension. The numbers
120, 80	reflect a systolic reading of and a diastolic reading of
hyper	High blood pressure is calledtension, and low blood
hypo	pressure is calledtension.

CARDIAC CONDUCTION

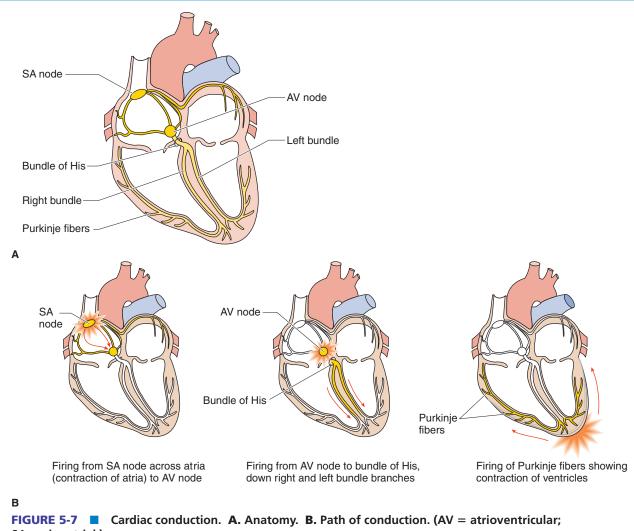
Cardiac conduction provides the electrical stimulus that is necessary to cause the heart muscle to pump blood by the continual contraction (systole) and relaxation (diastole) of myocardial cells (Fig. 5-7).

Repeated electrical impulses are conducted:



The impulses cause each myocardial cell to change:

from a resting state (polarized) to a state of contraction (depolarized) then back to a resting state by recharging (repolarizing)



SA = sinoatrial.)



Self-Instruction: Cardiac Conduction Terms

Study the following:

TERM	MEANING
sinoatrial (SA) node sī' nō-ā' trē-ăl nōd	the pacemaker; highly specialized, neurological tissue impeded in the wall of the right atrium; responsible for initiating electrical conduction of the heartbeat, causing the atria to contract and firing conduction of impulses to the AV node
atrioventricular (AV) node ā' trē-ō-ven-trik' yū-lăr nōd	neurological tissue in the center of the heart that receives and amplifies the conduction of impulses from the SA node to the bundle of His
bundle of His bŭn' dĕl of hiz	neurological fibers extending from the AV node to the right and left bundle branches that fire the impulse from the AV node to the Purkinje fibers

TERM	MEANING
Purkinje fibers pĕr-kin' jē fī' bĕrz Purkinje network pĕr-kin' jē net' wŏrk	fibers in the ventricles that transmit impulses to the right and left ventricles, causing them to contract
polarization pō'lăr-i-ză'shŭn	resting; resting state of a myocardial cell
depolarization dē-pō' lăr-i-zā' shŭn	change of a myocardial cell from a polarized (resting) state to a state of contraction (<i>de</i> = not; <i>polarization</i> = resting)
repolarization rē'pō-lăr-i-zā'shŭn	recharging of the myocardial cell from a contracted state back to a resting state (<i>re</i> = again; <i>polarization</i> = resting)
normal sinus rhythm (NSR) nōr' măl sī' nŭs rith'ŭm	regular rhythm of the heart cycle stimulated by the SA node (average rate of 60–100 beats/minute) (see Fig. 5-11)

Programmed Review: Cardiac Conduction Terms

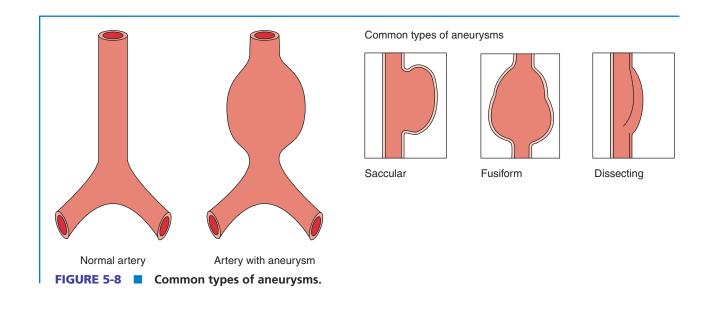
ANSWERS	REVIEW
sinoatrial AV, atri/o ventricul/o	5.33 Review Figure 5-7. The term SA node refers to the node, which is where the heart's electrical impulse originates. This impulse is conducted to the atrioventricular, or, node, a term made from the combining forms and
Purkinje contract	5.34 The impulse then moves from the bundle of His down the right and left bundle branches to the fibers, which transmit impulses to the ventricles and cause them to This rhythmic contraction is the heartbeat.
muscle heart heart muscle	5.35 The combining form <i>my/o</i> means, and the combining form <i>cardi/o</i> means Myocardial cells comprise the
depolarization repolarization	5.36 The resting state of the myocardial cells is called polarization. When each cell contracts, it changes to a state of The stage of is the change back to a resting state.
sinoatrial, normal sinus	5.37 The normal regular heart rhythm produced by this continued simulation of heart muscle by electrical impulses originating in the, or SA, node is called rhythm, or NSR.



Self-Instruction: Symptomatic Terms

Study the following:

TERM	MEANING
aneurysm (Fig. 5-8) an' yū-rizm	a widening; a bulging of the wall of the heart, aorta, or artery caused by a congenital defect or acquired weakness
saccular aneurysm sak-yū-lăr an'yū-rizm	a sac-like bulge on one side
fusiform aneurysm fyū'si-fōrm an'yū-rizm	a spindle-shaped bulge
dissecting aneurysm di-sek'ting an'yū-rizm	a split or tear of the vessel wall
angina pectoris an'ji-nă pek'tō-ris	chest pain caused by a temporary loss of oxygenated blood to heart muscle; often caused by narrowing of the coronary arteries (angina = to choke)
arteriosclerosis ar-tēr'ē-ō-skler-ō'sis	thickening, loss of elasticity, and calcification (hardening) of arterial walls
atherosclerosis ath'er-ō-skler-ō'sis	a form of arteriosclerosis characterized by the buildup of fatty substances that harden within the walls of arteries
atheromatous plaque (Fig. 5-9, A) ath-ĕr-ō'mă-tŭs plak	a swollen area within the lining of an artery caused by the buildup of fat (lipids)
claudication klaw-di-kā'shйn	to limp; pain in a limb (especially the calf) while walking that subsides after rest; caused by inadequate blood supply
constriction (see Fig. 5-9, A) kon-strik'shun	compression of a part that causes narrowing (stenosis)
diaphoresis dī'ă-fō-rē'sis	profuse sweating (perspiration)



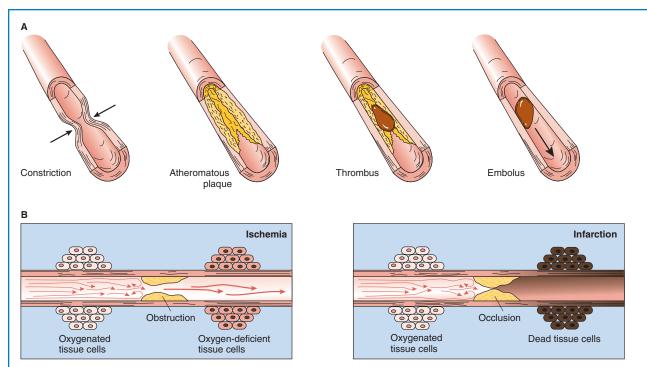


FIGURE 5-9 A. Examples of conditions causing a reduction in blood flow. **B.** Effects of reduced blood flow.

TERM	MEANING
embolus (see Fig. 5-9, A) em' bō-lŭs	a clot (e.g., air, fat, or a foreign object) carried in the bloodstream that obstructs the flow of blood when it lodges (<i>embolus</i> = a stopper)
heart murmur hart mŭr'mŭr	an abnormal sound from the heart produced by defects in the chambers or valves
infarct (see Fig. 5-9, B) in'farkt	to stuff; a localized area of necrosis (condition of tissue death) caused by ischemia resulting from occlusion of a blood vessel
ischemia (see Fig. 5-9, B) is-kē'mē-ă	to hold back blood; decreased blood flow to tissue caused by constriction or occlusion of a blood vessel
perfusion deficit pĕr-fyū'zhŭn def'i-sit	lack of flow through a blood vessel caused by narrowing, occlusion, etc.
occlusion (see Fig. 5-9, В) ŏ-klū'zhйn	plugging; an obstruction or a closing off
palpitation pal-pi-tā' shŭn	subjective experience of pounding, skipping, or racing heartbeats
stenosis ste-nō' sis	condition of narrowing of a part
thrombus (see Fig. 5-9, A) throm' bus	a stationary blood clot
vegetation (Fig. 5-10) vej-ĕ-tā'shŭn	to grow; an abnormal growth of tissue around a valve, generally as a result of infection



FIGURE 5-10 The mitral valve shows destructive vegetations, which have eroded through the free margins of the valve leaflets in a patient with bacterial endocarditis.

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
hard	5.38 <i>Scler/o</i> , a combining form meaning, is a key
	component in the term arteriosclerosis, which refers to thickening,
artery or arterial	loss of elasticity, and hardening of walls. Ather/o, a
fatty or lipid	combining form meaning paste, is used in the term that
	specifically describes a condition or increase of hardened fatty
atherosclerosis	substances built up within the walls of arteries:
embolus	5.39 An is a clot of any sort carried in the bloodstream
	that obstructs the flow of blood when it lodges. A thrombus, on the
stationary	other hand, is a blood clot.
	5.40 Blood flow through a vessel can be affected by various kinds
	of restrictions. A condition or increase of narrowing is called
stenosis	Stenotic conditions can be the result of a compression
constriction	orof a vessel. A buildup of atherosclerotic substances
narrowing	can also cause stenosis, a condition of An
plugging or obstruction	occlusion, which is the of a vessel, also might occur.
ischemia	5.41 If blood flow is reduced to tissue, occurs. When
	diagnostic tests detect the lack of blood flow from a vessel to tissue
deficit	cells, it is called a perfusion Perfusion refers to tissues
	with an adequate circulation of blood.



Self-Instruction: Diagnostic Terms

Study the following:

TERM	MEANING	
RELATED TO THE HEART AND ARTERIES		
acute coronary syndrome (ACS) ă-kyūt' kōr'ŏ-nār-ē sin'drōm	signs and symptoms indicating an active process of atherosclerotic plaque buildup or formation of a thrombus, or spasm within a coronary artery, causing a reduction or loss of blood flow to myocardial tissue; includes unstable angina and other pathological events leading to myocardial infarction (MI); early diagnosis and rapid treatment are critical to avoid or minimize damage to heart muscle	
arrhythmia (Fig. 5-11) ă-rith' mē-ă dysrhythmia dis-rith' mē-ă	any of several kinds of irregularity or loss of rhythm of the heartbeat	
bradycardia brad-ē-kar' dē-ă	slow heart rate (less than 60 beats/minute)	
fibrillation fi-bri-lā' shŭn	chaotic, irregular contractions of the heart, as in atrial or ventricular fibrillation	
premature ventricular contraction (PVC) prē-mă-tūr' ven-trik'ū-lăr kon-trak' shŭn	a ventricular contraction preceding the normal impulse initiated by the SA node (pacemaker)	
tachycardia tak-i-kar' dē-ă	fast heart rate (greater than 100 beats/minute)	
bacterial endocarditis bak-tēr'ē-ăl en'dō-kar-dī'tis	a bacterial inflammation that affects the endocardium or the heart valves	
cardiac tamponade kar' dē-ak tam-pŏ-nād'	compression of the heart produced by the accumulation of fluid in the pericardial sac, as results from pericarditis or	

(tampon = a plug)

cardiomyopathy kar' dē-ō-mī-op' ă-thē

congenital anomaly of the heart

kon-jen' ĭ-tăl ah-nom' ah-lē of the hart

atrial septal defect (ASD) ā' trē-ăl sep' tăl dē' fekt

coarctation of the aorta kō-ark-tā' shŭn of the ā-ōr' tă a general term for disease of the heart muscle, such as alcoholic cardiomyopathy (damage to the heart muscle caused by excessive consumption of alcohol)

trauma, causing rupture of a blood vessel within the heart

malformations of the heart that are present at birth (congenital = born with; anomaly = irregularity)

an opening in the septum separating the atria

narrowing of the descending portion of the aorta, resulting in a limited flow of blood to the lower part of the body



FIGURE 5-11 ■ Electrocardiogram (ECG or EKG) tracings showing common types of arrhythmia.

TERM	MEANING
patent ductus arteriosus (PDA) pā' tent dŭk' tŭs ar-tē' rē-ō' sŭs	an abnormal opening between the pulmonary artery and the aorta caused by failure of the fetal ductus arteriosus to close after birth (<i>patent</i> = open)
ventricular septal defect (VSD) ven-trik' yū-lăr sep' tăl dē' fekt	an opening in the septum separating the ventricles
congestive heart failure (CHF) kon-jes'tiv hart fāl'yūr left ventricular failure left ven-trik'yū-lăr fāl'yūr	failure of the left ventricle to pump an adequate amount of blood to meet the demands of the body, resulting in a "bottleneck" of congestion in the lungs that may extend to the veins, causing edema in lower portions of the body
cor pulmonale kōr pul-mō-nā' lē right ventricular failure rīt ven-trik' yū-lăr fāl' yūr	enlargement of the right ventricle, resulting from chronic disease within the lungs, that causes congestion within the pulmonary circulation and resistance of blood flow to the lungs (<i>cor</i> = heart)
coronary artery disease (CAD) (Fig. 5-12) kōr'ŏ-nār-ē ar' tĕr-ē di-zēz'	a condition affecting arteries of the heart that reduces the flow of blood and the delivery of oxygen and nutrients to the myocardium; most often caused by atherosclerosis
hypertension (HTN) hī' pĕr-ten' shŭn	persistently high blood pressure
essential hypertension ĕ-sen' shăl hī' pĕr-ten' shŭn primary hypertension prī' mār-ē hī' pĕr-ten' shŭn	high blood pressure attributed to no single cause; risks include smoking, obesity, increased salt intake, hypercholesterolemia, and hereditary factors
secondary hypertension sĕk'ŏn-dār'ē hī' pĕr-ten' shŭn	high blood pressure caused by the effects of another disease (e.g., kidney disease)

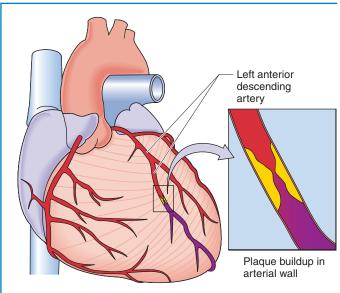


FIGURE 5-12 Coronary artery disease (CAD).

TERM	MEANING
mitral valve prolapse (MVP) mī' trăl valv prō' lapz	protrusion of one or both cusps of the mitral valve back into the left atrium during ventricular contraction, resulting in incomplete closure and backflow of blood
myocardial infarction (MI) (Fig. 5-13) mī-ō-kar' dē-ăl in-fark' shŭn	heart attack; death of myocardial tissue (infarction) caused by ischemia (loss of blood flow) as a result of an occlusion (plugging) of a coronary artery; usually caused by atherosclerosis; symptoms include pain in the chest or upper body (shoulders, neck, and jaw), shortness of breath, diaphoresis, and nausea
myocarditis mī'ō-kar-dī' tis	inflammation of myocardium; most often caused by viral or bacterial infection
pericarditis per'i-kar-dī'tis	inflammation of the pericardium
rheumatic heart disease rū-mat' ik hart di-zēz'	damage to heart muscle and heart valves by rheumatic fever (a streptococcal infection)
sudden cardiac arrest (SCA) sŭd' dĕn kar' dē-ak ă-rest'	the abrupt cessation of any cardiac output (CO), most commonly as the result of ventricular fibrillation; causes sudden death unless defibrillation is initiated immediately
RELATED TO THE VEINS	
deep vein thrombosis (DVT) dēp vān throm-bō'sis	formation of a clot in a deep vein of the body, occurring most often in the femoral and iliac veins
phlebitis fle-bī'tis	inflammation of a vein
thrombophlebitis throm' bō-fle-bī' tis	inflammation of a vein associated with a clot formation
varicose veins (Fig. 5-14) var'ĭ-kōs vāns	abnormally swollen, twisted veins with defective valves; most often seen in the legs

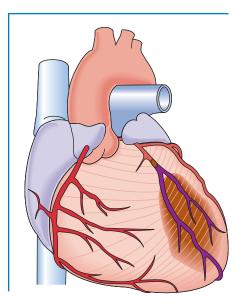
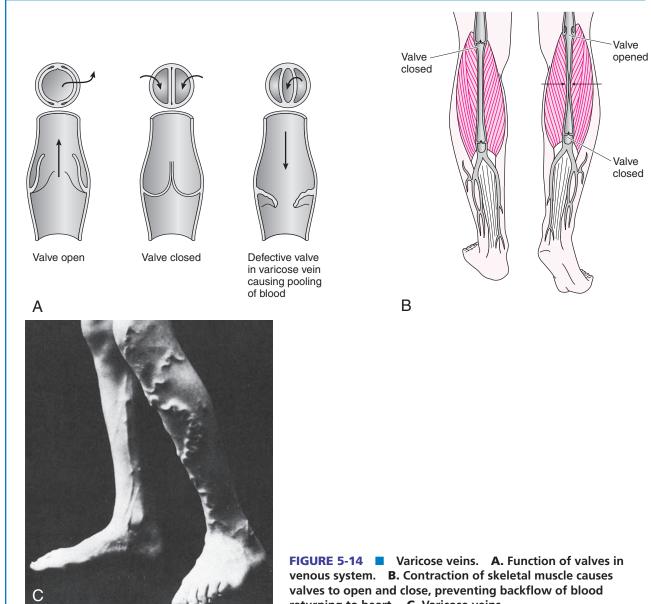


FIGURE 5-13 Anterolateral myocardial infarction (MI) (darkened area), caused by occlusion of anterior descending branch of the left coronary artery.



returning to heart. C. Varicose veins.

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
inflammation	5.49 The suffix -itis refers to an Myocarditis
myocardium	therefore means an inflammation of the
pericarditis	Inflammation of the pericardium is called
	Bacterial endocarditis is a bacterial inflammation affecting the
endocardium	and heart valves.

ANSWERS	REVIEW
hypertension, HTN essential Secondary	5.63 The condition of persistently high blood pressure is called and is abbreviated as Primary, or, hypertension cannot be attributed to a single cause hypertension, however, is caused by another condition, such as kidney disease.
rheumatic	5.64 Rheumatic fever can cause damage to heart muscle and valves. This is called heart disease.
vein phlebitis	5.65 <i>Phleb/o</i> is a combining form for Combined with the suffix for inflammation, this forms the term, which means inflammation of a vein. If that inflammation is associated with a clot formation, the condition is called
thrombophlebitis	·
deep vein thrombosis thrombus embolus	5.66 The condition of a formed clot in a deep vein of the body is called (DVT). The danger of any clot () formation in a vein is that it can break loose to become a traveling

Self-Instruction: Diagnostic Tests and Procedures

Study the following:

TEST OR PROCEDURE	EXPLANATION
auscultation (Fig. 5-15) aws-kŭl-tā' shŭn	physical examination method of listening to sounds within the body with a stethoscope (e.g., auscultation of the chest for heart and lung sounds)
gallop gal'ŏp	abnormal heart sound that mimics the gait of a horse; related to abnormal ventricular contraction



FIGURE 5-15 • Auscultating heart sounds.

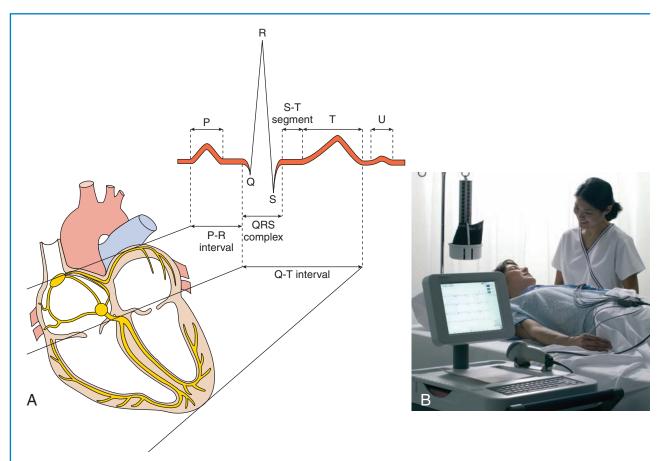


FIGURE 5-16 A. Electrocardiographic conduction. B. Resting electrocardiogram (ECG or EKG).

TEST OR PROCEDURE

electrocardiogram (ECG or **EKG**) (Fig. 5-16; see Fig. 5-11) ē-lek-trō-kar' dē-ō-gram

stress electrocardiogram (stress ECG or EKG)

(Fig. 5-17) stres ē-lek-trō-kar' dē-ō-gram

Holter ambulatory monitor

hōl'ter am'byū-lă-tōr-ē mon'i-tŏr

intracardiac electrophysiological study (EPS)

in' tră-kar' dē-ak ē-lek' trō-fiz'ē-ō-loj' i-kăl stŭd'ē

intracardiac catheter ablation

in' tră-kar' dē-ak kath' ĕ-tĕr ab-lā'shŭn

EXPLANATION

an electrical picture of the heart represented by positive and negative deflections on a graph labeled with the letters P, Q, R, S, and T, which correspond to events of the cardiac cycle

electrocardiogram (ECG or EKG) of the heart recorded during the induction of controlled physical exercise using a treadmill or ergometer (bicycle); useful in detecting heart conditions (e.g., ischemia or infarction)

portable electrocardiograph worn by the patient that monitors electrical activity of the heart over 24 hours; useful in detecting periodic abnormalities

invasive procedure involving placement of catheter-guided electrodes within the heart to evaluate and map the electrical conduction of cardiac arrhythmias; intracardiac catheter ablation may be performed at the same time to treat the arrhythmia

use of radiofrequency waves sent through a catheter within the heart to treat arrhythmias by selectively destroying myocardial tissue at sites that generate abnormal electrical pathways



Stress electrocardiography. FIGURE 5-17

TEST OR PROCEDURE

magnetic resonance angiography (MRA)

mag-net'ik rez'ŏ-nănts an-jē-og'ră-fē

nuclear medicine imaging mī'klē-àr med'i-sin im'ă-jing

myocardial radionuclide perfusion scan

mī-ō-kar' dē-ăl rā' dē-ō-nū' klīd për-fyū'zhun skan

> myocardial radionuclide perfusion stress scan

mī-ō-kar' dē-ăl rā' dē-ō-nū' klīd për-fyū'zhŭn stres skan

multiple-gated acquisition (MUGA) scan

mŭl'ti-pul-gāt'ĕd ak-wi-zish'ŭn skan

EXPLANATION

magnetic resonance imaging of the heart and blood vessels for evaluation of pathology (see Fig. 8-15)

radionuclide organ imaging of the heart after administration of radioactive isotopes to visualize structures and to analyze functions

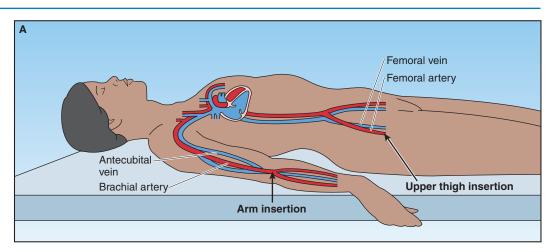
scan of the heart made after an intravenous (IV) injection of an isotope (e.g., thallium) as it is absorbed by myocardial cells in proportion to blood flow throughout the heart; useful in evaluating coronary artery disease (CAD)

nuclear perfusion scan of the heart that is made before and after the induction of controlled physical exercise (treadmill or bicycle) or a pharmaceutical agent that produces the effect of exercise stress in patients who are unable to ambulate

nuclear image of the beating heart in motion made as radioactive isotopes are injected in the bloodstream and traced through the heart's chambers; useful in evaluating the pumping function of the ventricles

contents ejected with each contraction

ē-jek'shun frak'shun



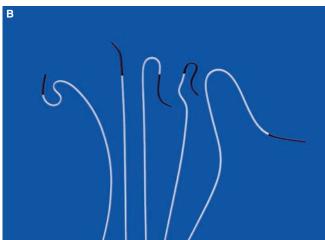




FIGURE 5-18 Cardiac catheterization. A. Possible insertion sites for cardiac catheterization. B. Angiographic catheters. (Photo courtesy of Cook Incorporated, Bloomington, IN.) C. Cardiac catheterization laboratory.

TEST OR PROCEDURE

computed tomographic angiography (CTA)

(Fig. 5-19) kom-pyū' tĕd tō-mo-grăf ik an-jē-og'ră-fē

sonography

sŏ-nog'ră-fē

echocardiography (echo) (Fig. 5-20) ek'ō-kar-dē-og'ră-fē

stress echocardiogram (stress echo)

stres ek-ō-kar' dē-ō-gram

transesophageal echocardiogram (TEE)

trans-e-sof ăj-ē-ăl ek-ō-kar' dē-ō-gram

Doppler sonography dop' ler so-nog' ră-fe

EXPLANATION

specialized, noninvasive, three-dimensional (3-D) computed tomographic scan of the heart and circulation of the "greater" blood vessels, such as the coronary arteries, aorta, and pulmonary veins; performed with or without contrast

sonographic imaging

recording of sound waves through the heart to evaluate structure and motion (see Fig. 5-1)

echocardiogram of the heart recorded during the induction of controlled physical exercise (treadmill or bicycle) or a pharmaceutical agent that produces the effect of exercise stress in patients who are unable to ambulate; useful in detecting conditions such as ischemia or infarction echocardiogram of the heart after placement of an ultrasonic transducer at the end of an endoscope inside the esophagus

ultrasound technique used to evaluate blood flow to determine the presence of a deep vein thrombosis (DVT) or carotid insufficiency, or to determine flow through the heart, chambers, valves, and so on (see Figs. 5-4 and 5-5)

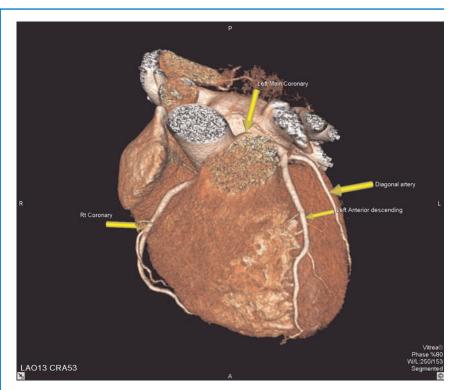


FIGURE 5-19 Computed tomographic angiography (CTA) of normal heart. Arrows point to right coronary artery (RCA), left main coronary artery, diagonal artery, and left anterior descending artery (LAD)

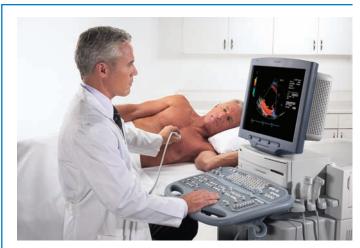


FIGURE 5-20 Echocardiography (echo).

Programmed Review: Diagnostic Tests and Procedure

ANSWERS	REVIEW
chest stethoscope auscultation	5.67 Recall that the combining form <i>steth/o</i> means, and that a is an instrument for listening to sounds within the chest or elsewhere in the body. This procedure, from the Greek word meaning to listen, is called
gallop	5.68 Auscultation can be used to detect a heart murmur or other abnormal heart sound, such as that which mimics the gait of a horse, called a
record heart electrocardiogram stress electrocardiogram	5.69 The suffix <i>-gram</i> refers to a The combining form <i>cardi/o</i> refers to the A record of the electrical conductivity of the heart is called an (ECG or EKG). A special kind of electrocardiogram obtained during the physical stress of exercise is called a
vessel angiography angiogram heart	5.70 The combining form <i>angi/o</i> refers to a The suffix <i>-graphy</i> refers to the diagnostic process of making a record, such as by x-ray imaging. The process of x-ray imaging a blood vessel is called, and the record itself is called an A coronary angiogram is an x-ray image of the blood vessels encircling the

REVIEW
5.71 An x-ray of a particular artery is called an arteriogram. An x-ray image of the aorta is called an An x-ray image of a vein is called a
5.72 A catheter can be introduced into the heart for diagnostic purposes. This process is called Left heart catheterization is usually done to obtain a radiograph of the left ventricular cavity and coronary arteries, and heart catheterization is usually done to measure saturation and pressure.
5.73 An x-ray image of the ventricles is called a, from the combining form <i>ventricul/o</i> and the suffix
5.74 Cardiac catheterization also allows for measurement of stroke volume (SV), or how much blood is ejected from a ventricle in one Cardiac (CO) measures the amount of blood ejected per minute from either ventricle; ejection fraction measures the volume percentage of the ventricular contents with each contraction.
5.75 The abbreviation MRI stands for The abbreviation MRA stands for magnetic resonance, which is specialized imaging of the heart and blood vessels. The abbreviation CT stands for The process abbreviated as CTA provides a specialized and greater vessels.
5.76 Nuclear medicine imaging, or, uses radioactive isotopes to visualize body structures and to analyze A myocardial perfusion scan is made of the flow. A must be a nuclear image of the beating heart in and is useful in evaluating the function of the ventricles. The abbreviation PET stands for, which is a nuclear scan that

ANSWERS	REVIEW
isotopes	uses radioactive and computed tomographic (CT) technology. PET is used in cardiology to study the cellular metabolism of the heart. These scans can be made with the patient at rest or after exercise or
ultrasound sound echo	5.77 Sonography, or diagnostic, is the imaging modality using high-frequency waves to visualize body tissues. The recording of sound waves through the heart to evaluate structure and motion is called cardiography.
echocardiogram stress transesophageal	5.78 A record of the heart made with echocardiography (echo) is called an If made during controlled exercise, it is called a echocardiogram. If made after passing the transducer through the esophagus, it is called a echocardiogram (TEE).
Doppler	5.79 The type of sonography that uses ultrasound to evaluate blood flow is called sonography.
within, heart arrhythmias electrophysiological study	5.80 Intracardiac means pertaining to the Physiological means pertaining to function. The invasive procedure involving the placement of a catheter within the heart to map the electrical conduction of cardiac dysrhythmias, or, is abbreviated as EPS, which stands for intracardiac The myocardial tissue generating abnormal electrical pathways can be treated at the time of an intracardiac electrophysiological study by using high-frequency waves sent through a catheter to ablate or destroy myocardial tissue responsible
intracardiac, ablation	for generating the abnormal conduction. This treatment is called catheter



Self-Instruction: Operative Terms

Study the following:

TERM MEANING

PROCEDURES PERFORMED IN THE TRADITIONAL OPERATING ROOM

coronary artery bypass graft (CABG) (Fig. 5-21) kōr'ŏ-nār-ē ar' tĕr-ē bī' pas graft grafting a portion of a blood vessel retrieved from another part of the body (e.g., a length of saphenous vein from the leg or mammary artery from the chest wall) to bypass an occluded

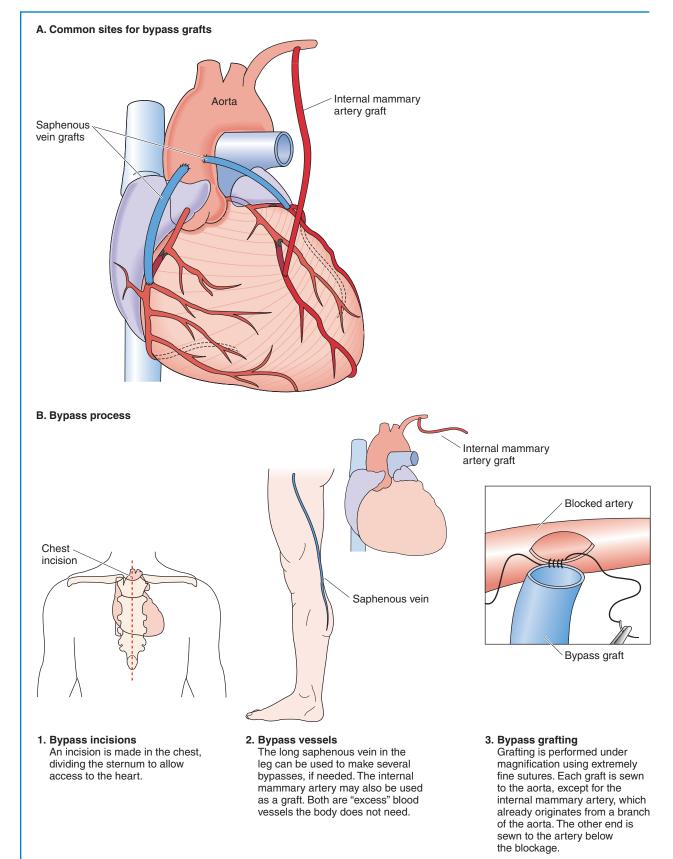


FIGURE 5-21 Traditional method of coronary artery bypass graft (CABG). A. Common sites for bypass grafts. B. Bypass grafting.

TERM	MEANING
anastomosis ă-nas' tō-mō' sis	coronary artery, restoring circulation to myocardial tissue; the traditional method includes temporary arrest of the heart with circulation (bypass) of the patient's blood through a heartlung machine during the procedure; an alternative, off-pump approach uses a stabilizer to perform the procedure on the beating heart; the abbreviation CABG is pronounced "cabbage" opening; the joining of two blood vessels to allow flow from one to the other
endarterectomy end'ar-tĕr-ek' tŏ-mē	surgical removal of the lining of an artery to clear a blockage caused by a clot or atherosclerotic plaque buildup
valve replacement valv rē-plās' ment	surgery to replace a diseased heart valve with an artificial valve; there are two types of artificial valves: tissue valves, most commonly made from animal tissue (e.g., porcine [pig] or bovine [cow]), and mechanical valves, made from synthetic material
valvuloplasty val'vyū-lō-plas-tē	surgical repair of a defective heart valve

PROCEDURES PERFORMED IN A CATHETERIZATION LABORATORY

percutaneous coronary intervention (PCI)

(Fig. 5-22)pĕr-kyū-tā'nē-yŭs kōr'ŏ-nār'ē in' tĕr-ven' shùn

angioscopy an-jē-os'kō-pē vascular endoscopy vas' kyū-lăr en-dos' kŏ-pē

atherectomy (see Fig. 5-22, A) ath-e-rek' tō-mē

percutaneous transluminal coronary angioplasty (PTCA)

(see Fig. 5-2) pĕr-kyū-tā'nē-ŭs tranz' lū-men' ăl kōr' ŏ-nār-ē an' jē-ō-plas-tē

> intravascular stent placement (see Fig. 5-22, B) in' trà-vas' kyū-lär stent

plās' ment

interventional procedures used to treat coronary artery disease (CAD) performed at the time of cardiac catheterization in a specialized laboratory setting (or "cath lab") instead of the traditional operating room

use of a flexible fiberoptic angioscope (accompanied by an irrigation system, camera, video recorder, and monitor) that is guided through a specific blood vessel to visually assess a lesion and to select the mode of therapy

excision of atheromatous plaque from within an artery utilizing a device housed in a flexible catheter that selectively cuts away or pulverizes tissue buildup

a method for treating the narrowing of a coronary artery by inserting a specialized catheter with a balloon attachment, then inflating the balloon to dilate and open the narrowed portion of the vessel and restore blood flow to the myocardium; most often includes the placement of a stent

implantation of a device used to reinforce the wall of a vessel and assure its patency (openness); most often used to treat a stenosis or a dissection (a split or tear in the wall of a vessel) or to reinforce patency of a vessel after angioplasty

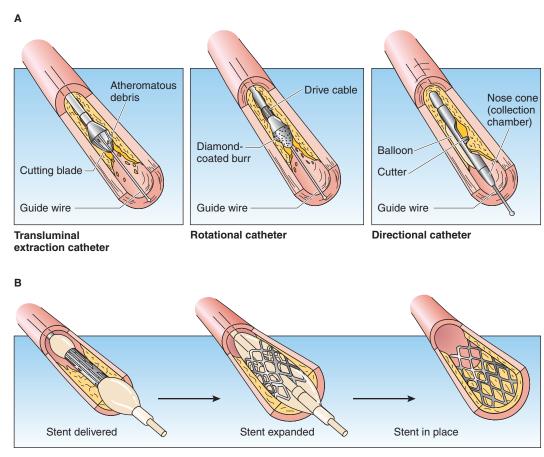


FIGURE 5-22 Examples of devices used in percutaneous coronary interventional procedures. A. Atherectomy devices. B. Intravascular stent.

Programmed Review: Operative Terms

ANSWERS	REVIEW
vessel angioscope	5.81 The suffix <i>-scopy</i> refers to the process of examination. Angioscopy is the examination of a blood using a fiberoptic
-ectomy atherectomy endarterectomy	5.82 The suffix refers to removal or excision. Removal of an atheromatous plaque is called an Using the prefix <i>endo-</i> , the term for the surgical removal of the lining of an artery is an
bypass graft	5.83 CABG is the abbreviation for a coronary artery, in which a portion of a blood vessel is grafted in place to bypass an occluded coronary artery.
vessels	5.84 An anastomosis is the joining of two blood to allow flow from one to the other.

ANSWERS	REVIEW
	5.85 The suffix <i>-plasty</i> refers to a surgical repair or reconstruction.
valvuloplasty	A is the repair of a defective heart valve. Valve
	replacement describes the replacement of a diseased heart valve with
	an artificial valve. Types of artificial valves include mechanical ones,
tissue	made from synthetic material, and valves made from
pig, cow	animal tissue, such as porcine () or bovine ().
vessel	5.86 An angioplasty is the surgical repair of a blood
	A specialized procedure called a percutaneous transluminal
coronary angioplasty	(PTCA) is a treatment
	for a narrowed coronary artery.
stent	5.87 An intravascular is implanted to keep a blood
	vessel open and to reinforce the vessel's wall.



Self-Instruction: Therapeutic Terms

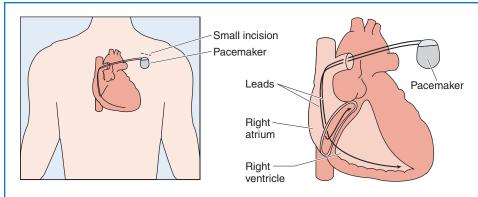
Study the following:

TERM	MEANING
defibrillation (Fig. 5-23) dē-fib-ri-lā'shйn defibrillator dē-fib'ri-lā-tŏr	termination of ventricular fibrillation by delivering an electrical stimulus to the heart; most commonly, this is done by applying the electrodes of the defibrillator externally to the chest wall, but it can also be performed internally, such as during open heart surgery or via an implanted device device that delivers the electrical stimulus in defibrillation
cardioversion	restoration of a fast or irregular heart rate to a normal rhythm,
kar' dē-ō-ver' zhŭn	either by pharmaceutical means or by delivery of electrical energy
implantable cardioverter defibrillator (ICD) im-plan' tă-bĕl kar' dē-ō-ver' ter dē-fib' ri-lā-tŏr	an implanted, battery-operated device with rate-sensing leads; the device monitors cardiac impulses and initiates an electrical stimulus as needed to stop ventricular fibrillation or tachycardia
pacemaker (Fig. 5-24) pās' mā-kĕr	a device used to treat slow heart rates (bradycardia) by electrically stimulating the heart to contract; most often, it is implanted with lead wires and battery circuitry under the skin, but it can also be placed on a temporary basis externally with lead wires inserted into the heart via a vein



FIGURE 5-23 ■ A. External defibrillation. B. Internal defibrillation performed in the operating room.

TERM MEANING			
COMMON THERAPEUTIC DRUG CLASSIFICATIONS			
angiotensin-converting enzyme (ACE) inhibitor an-jē-ō-ten' sin-kon-vert' ing en' zīm in-hib' i-tŏr	drug that suppresses the conversion of angiotensin in the blood by the angiotensin-converting enzyme (ACE); used in the treatment of hypertension		
antianginal an' tē-an' ji-năl	drug that dilates coronary arteries, restoring oxygen to the tissues to relieve the pain of angina pectoris		
antiarrhythmic an' tē-ă-rith' mik	drug that counteracts cardiac arrhythmia		
anticoagulant an' tē-kō-ag' yū-lant	drug that prevents clotting of the blood; commonly used in the treatment of thrombophlebitis and myocardial infarction		
antihypertensive an' tē-hī-per-ten' siv	drug that lowers blood pressure		
beta-adrenergic blocking agents bā' tă-ad-rĕ-nĕr' jik blok' ing ā' jentz beta-blockers bā' tă-blok' ĕrz	agents that inhibit responses to sympathetic adrenergic nerve activity, causing a slowing of electrical conduction and heart rate and a lowering of the pressure within the walls of the vessels; used to treat angina pectoris and hypertension; the Greek small letter <i>beta</i> is commonly used in the names of these agents (i.e., β-blockers)		



A small incision is made in the upper chest, below the clavicle, to access a large vein nearby.

The pacemaker leads are then guided through the vein and into the heart. After proper placement is determined, the leads are secured in position.

A small "pocket" to house the pacemaker is created just under the skin at the incision site. The leads are connected to the pacemaker that is secured in the "pocket." Finally, the incision is closed with a few sutures.





FIGURE 5-24 Pacemaker. A. Endocardial pacemaker. B. Teleradiology/critical care workstation chest radiographs on screen show pacemaker placement.

TERM	MEANING		
calcium-channel blockers kal' sē-ŭm-chan'ĕl blok'ĕrz	agents that inhibit the entry of calcium ions into heart muscle cells, causing a slowing of the heart rate, a lessening of the demand for oxygen and nutrients, and a relaxing of the smooth muscle cells of the blood vessels to cause dilation; used to prevent or treat angina pectoris, some arrhythmias, and hypertension		
cardiotonic kar' dē-ō-ton' ik	drug that increases the force of myocardial contractions in the heart; commonly used to treat congestive heart failure (CHF)		
diuretic dī-yū-ret'ik	drug that increases the secretion of urine; commonly prescribed in treating hypertension		
hypolipidemic hī-pō-lip'i-dē'mik	drug that reduces serum fat and cholesterol		

TERM	MEANING	
thrombolytic agents throm-bō-lit' ik ā' jentz	drugs used to dissolve thrombi (blood clots) (e.g., streptokinase or tissue plasminogen activator [TPA or tPA]); used in acute management of myocardial infarction (MI) and ischemic stroke; commonly called "clot busters"	
vasoconstrictor vā'sō-kon-strik'tŏr	drug that causes a narrowing of the blood vessels, thereby decreasing blood flow	
vasodilator vā' sō-dī-lā' tŏr	drug that causes dilation of the blood vessels, thereby increasing blood flow	

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW			
bradycardia pacemaker	5.88 The term for a condition of slow heart is A device that is surgically implanted to make a slow heart maintain an adequate pace is called a			
fast	5.89 Tachycardia is a condition of heart rate. Version is a process of turning. The method of turning an abnormally fast or irregular heart rate back to normal by use of a drug or delivery of electrical energy is called			
fibrillation, not	 5.90 Chaotic, irregular contractions of the heart are called The prefix <i>de-</i> means from, down, or A device used on a patient to stop ventricular fibrillation is called a The process of doing so is called defibrillation. 			
implantable cardioverter defibrillator	5.91 An implantable device that initiates an electrical stimulus to stop ventricular fibrillation or tachycardia is called an (ICD).			
against or opposed to coagulation or clotting hypertensive	5.92 The prefix <i>anti-</i> means Drugs in the class known as anticoagulants work to prevent A drug that lowers high blood pressure is called an anti			
chest pain antianginal	5.93 Recall that angina pectoris is Drugs that treat this pain are classified as drugs. Nitroglycerin is a common antianginal medication. It acts as a			
dilator myocardium	vaso, causing the coronary arteries to expand and, thereby, increasing the flow of blood to the heart muscle tissue, also known as the			

ANSWERS	REVIEW
arrhythmic	5.94 A drug that counteracts a cardiac arrhythmia is called an anti
beta-blockers	5.95 A number of different drug classifications are used to treat hypertension. Beta-adrenergic blocking agents, also called, more simply,, work by inhibiting responses to a nerve activity and slowing electrical conduction and heart rate.
calcium- channel	5.96 Another type of antihypertensive drug works by inhibiting the entry of calcium ions into heart muscle cells, thereby slowing the heart and causing other changes. These are called
urine	5.97 Another antihypertensive drug, called a diuretic, works by increasing the secretion of from the body.
tonic	5.98 Congestive heart failure (CHF) is often treated with drugs that increase the force of ventricular contractions. These drugs are called cardio agents.
hypolipid	5.99 Recall that lipids are fats. Using the prefix <i>hypo-</i> , the term for a drug that lowers the amount of fat in the blood is aemic agent.
breaking down or dissolution	5.100 The suffix <i>-lysis</i> means
clots	that work to dissolve thrombi or in the blood are called
thrombo	lytic agents. Thrombolytics, commonly known as
clot busters	, are used in acute management of ischemic
myocardial infarction	stroke and (MI).

CHAPTER 5 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
ACE	angiotensin-converting enzyme
ACS	acute coronary syndrome
ASD	atrial septal defect
AV	atrioventricular
BP	blood pressure
CABG	coronary artery bypass graft
CAD	coronary artery disease

ABBREVIATION	EXPANSION
CHF	congestive heart failure
CO	cardiac output
CTA	computed tomographic angiography
DVT	deep vein thrombosis
ECG or EKG	electrocardiogram
ЕСНО	echocardiography
EPS	electrophysiological study
HTN	hypertension
ICD	implantable cardioverter defibrillator
IV	intravenous
MI	myocardial infarction
MRA	magnetic resonance angiography
MUGA	multiple-gated acquisition (scan)
MVP	mitral valve prolapse
NSR	normal sinus rhythm
PCI	percutaneous coronary intervention
PDA	patent ductus arteriosus
PET	positron-emission tomography
PTCA	percutaneous transluminal coronary angioplasty
PVC	premature ventricular contraction
SA	sinoatrial
SCA	sudden cardiac arrest
SV	stroke volume
TEE	transesophageal echocardiogram
tPA or TPA	tissue plasminogen activator
VSD	ventricular septal defect

CHAPTER 5 SUMMARY OF TERMS

The terms introduced in chapter 5 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acute coronary syndrome (ACS)/227

ă-kyūt' kōr'ŏ-nār-ē sin'drōm

anastomosis/244 ă-nas' tō-mō' sis

aneurysm/223

an'yū-rizm

angina pectoris/223 an' ji-nă pek' tō-ris

angiogram/237 an'jē-ō-gram angiography/237

an-jē-og'ră-fē angioscopy/244 an-jē-os'kō-pē

angiotensin-converting enzyme (ACE) inhibitor/247

an-jē-ō-ten'sin-kon-ver'ting en'zīm in-hib'i-tŏr

antianginal/247 an' tē-an' ji-năl

antiarrhythmic/247 an' tē-ă-rith' mik

anticoagulant/247 an' tē-kō-ag' yū-lant

antihypertensive/247 an' tē-hī-per-ten' siv

aorta/213 ā-ōr'tă

aortic valve/213 ă-ōr' tik valv

aortogram/237 ā-ōr' tō-gram

arrhythmia/227 ă-rith' mē-ă arteries/213

ar' tĕr-ēz arteriogram/237 ar-tēr'ē-ō-gram

arterioles/213 ar-tēr'ē-ōlz

arteriosclerosis/223 ar-tēr'ē-ō-skler-ō'sis atherectomy/244 ath-e-rek' tō-mē

atheromatous plaque/223

ath-ĕr-ō' mă-tŭs plak atherosclerosis/223 ath'er-ō-skler-ō'sis

atrial septal defect (ASD)/227

ā'trē-ăl sep'tăl dē'fekt

atrioventricular (AV) node/221

ă' trē-ō-ven-trik' yū-lăr nōd

atrium/212 ā' trē-ŭm

auscultation/234 aws-kŭl-tā'shŭn

bacterial endocarditis/227 bak-tēr'ē-ăl en'dō-kar-dī'tis

beta-adrenergic blocking agents/247 bā' tă-ad-rĕ-nĕr' jik blok' ing ā' jentz

beta-blockers/247 bā' tă-hlok'ĕrz

bicuspid valve/213 bī-kŭs' pid valv bradycardia/227 brad-ē-kar' dē-ă

bundle of His/221 bŭn' dĕ l of hiz

calcium-channel blockers/248

kal' sē-ŭm-chan'ĕ l blok'ĕrz

capillaries/213 kap' i-lār-ēz

cardiac catheterization/237 kar' dē-ak kath' ĕ-ter-ī-zā' shŭn

cardiac output (CO)/237

kăr' dē-ak owt' put

cardiac tamponade/227 kar'dē-ak tam-pŏ-nād' cardiomyopathy/227 kar' dē-ō-mī-op' ă-thē cardiotonic/248 kar'dē-ō-ton'ik

cardioversion/246 kar'dē-ō-ver'zhŭn claudication/223 klaw-di-kā'shŭn

coarctation of the aorta/227 kō-ark-tā'shŭn of the ā-ōr'tă

computed tomographic angiography (CTA)/239

kom-pyū' tĕd tō-mo-graf' ik an-jē-og' ră-fē

congenital anomaly of the heart /227 kon-jen' ĭ-tăl ah-nom' ah-lē of the hart

congestive heart failure (CHF)/229

kon-jes'tiv hart fāl'yūr

constriction/223

kon-strik'shun

cor pulmonale/229

kōr pul-mō-nā' lē

coronary angiogram/237

kōr'ŏ-nār-ē an' jē-ō-gram

coronary artery bypass graft

(CABG)/242

kōr'ŏ-nār-ē ar'tĕr-ē bī'pas graft

coronary artery disease (CAD)/229

kōr'ŏ-nār-ē ar' tĕr-ē di-zēz'

coronary circulation/214

kōr'ŏ-nār-ē ser-kyū-lā'shŭn

deep vein thrombosis (DVT)/230

dēp vān throm-bō'sis

defibrillation/246

dē-fib-ri-lā'shŭn

defibrillator/246

dē-fib'ri-lā-tŏr

depolarization/222

dē-pō' lăr-i-zā' shŭn

diaphoresis/223

dī'ă-fō-rē'sis

diastole/219

dī-as' tō-lē

dissecting aneurysm/223

di-sek' ting an' yū-rizm

diuretic/248

dī-yū-ret'ik

Doppler sonography/239

dop'lĕr sŏ-nog'ră-fē

dysrhythmia/227

dis-rith' mē-ă

echocardiography (echo)/239

ek'ō-kar-dē-og'ră-fē

ejection fraction/237

ē-jek'shŭn frak'shŭn

electrocardiogram (ECG or EKG)/235

ē-lek-trō-kar' dē-ō-gram

embolus/224

em' bō-lŭs

endarterectomy/244

end'ar-tĕr-ek' tŏ-mē

endocardium/212

en-dō-kar' dē-ŭm

epicardium/212

ep-i-kar' dē-ŭm

essential hypertension/229

ĕ-sen'shăl hī'pĕr-ten'shŭn

fibrillation/227

fi-bri-lā' shŭn

fusiform aneurysm/223

fyū'si-form an'yū-rizm

gallop/234

gal'ŏp

heart murmur/224

hart mur'mur

heart valves/213

hart valvz

Holter ambulatory monitor/235

hōl'ter am' byū-lă-tōr-ē mon' i-tŏr

hypertension (HTN)/219, 229

hī' pĕr-ten' shŭn

hypolipidemic/248

hī-pō-lip'i-dē'mik

hypotension/219

hī' pō-ten' shŭn

implantable cardioverter defibrillator

(ICD)/246

im-plan' tă-bel kar' dē-ō-ver' ter dē-fib' ri-lā-tŏr

infarct/224

in'farkt

interatrial septum/212

in' tĕr-ā' trē-ăl sep' tŭm

interventricular septum/212

in' tĕr-ven-trik' yū-lăr sep' tŭm

intracardiac catheter ablation/235

in' tră-kar' dē-ak kath' ĕ-tĕr ab-lā' shun

intracardiac electrophysiological study (EPS)/235

in' tră-kar' dē-ak ē-lek' trō-fiz' ē-ō-loj' i-kăl

stŭd'ē

intravascular stent placement/244

in' tra-vas' kyū-lăr stent plās' ment

ischemia/224

is-kē' mē-ă

left heart catheterization/237

left hart kath'ĕ-ter-ĭ-zā'shŭn

left ventricular failure/229

left ven-trik'yū-lăr fāl'yūr

magnetic resonance angiography (MRA)/236

mag-net' ik rez'ŏ-nănts an-jē-og' ră-fē

mitral valve/213

mī' trăl valv

mitral valve prolapse (MVP)/230

mī' trăl valv prō' laps

multiple-gated acquisition (MUGA)

scan/236

mŭl'ti-pul-gāt'ĕd ak-wi-zish'ŭn skan

myocardial infarction (MI)/230

mī-ō-kar'dē-ăl in-fark'shŭn

myocardial radionuclide perfusion scan/236

mī-ō-kar' dē-ăl rā' dē-ō-nū' klīd pĕr-fyū' zhŭn skan

myocardial radionuclide perfusion stress scan/236

mī-ō-kar' dē-ăl rā' dē-ō-nū' klīd pĕr-fyū' zhŭn stres skan

myocarditis/230

mī'ō-kar-dī'tis

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normal sinus rhythm (NSR)/222

nōr'măl sī'nŭs rith'ŭm

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nōr-mō-ten'shŭn

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palpitation/224

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pā' tent dŭk' tŭs ar-tē' rē-ō' sus

percutaneous coronary intervention (PCI)/244

pĕr-kyū-tā'nē-yŭs kōr'ŏ-nār-ē in' tĕr-ven' shŭn

percutaneous transluminal coronary angioplasty (PTCA)/244

pěr-kyū-tā'nē-yŭs tranz'lū-men'ăl kōr'ŏ-nār-ē an' jē-ō-plas-tē

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pericardium/213

per-i-kar' dē-ŭm

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fle-bī'tis

polarization/222

pō'lăr-i-zā'shŭn

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poz'i-tron ē-mish'ŭn tō-mog'ră-fē skan of the hart

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pul'mō-năr-ē sem-ē-lū'năr valv

Purkinje fibers/222

për-kin' jë fī' bërz

Purkinje network/222

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rē'pō-lăr-i-zā'shŭn

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stres ek'ō-kar'dē-ō-gram

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(VSD)/229

ven-trik' yū-lăr sep' tăl dē' fekt

ventriculogram/237

ven-trik'yū-lō-gram

venules/213

ven'yūlz

visceral pericardium/213

vis'ĕr-ăl per-i-kar'dē-ŭm



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE:

pericardial

DEFINITION: around/heart/pertaining to

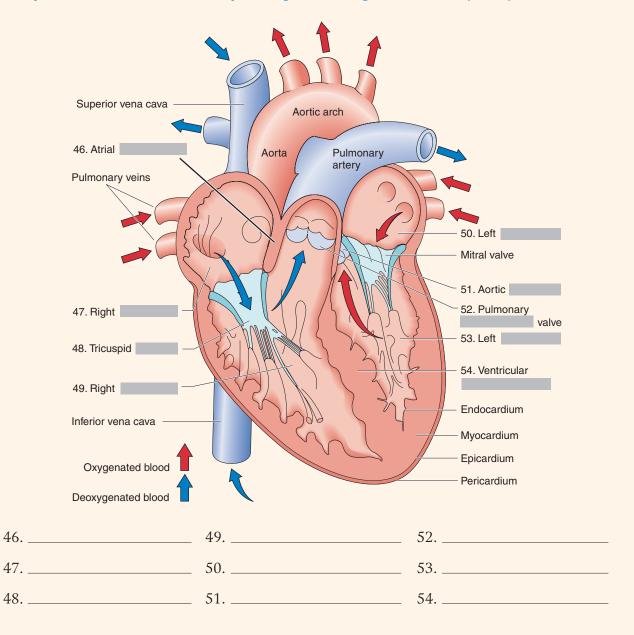
		DEFI	NITION: aroui	na/neart/pertaini	ng to	
1.	angiography					
		/				
2.	varicosis					
		/				
		٥				
3.	pectoral	1				
		/				
,						
4.	vasospasm	,				
		/				
_						
5.	venous					
		/				
		_				
6.	thrombophle	ebitis				
		// R				
	01		Ü			
7.	vasculopathy	7				
		// R				
	CF	R	S			
	DEFINITION:					
8.	atherogenesi	S				
		/				
	CF	S				
	DEFINITION:					

9.	stethoscope				
		/S			
	CF	S			
	DEFINITION:			 	
10.	myocardium				
		/	/		
	CF	/R	S		
	DEFINITION:				
11.	aortoplasty				
		/			
	CF	/S			
	DEFINITION:			 	
12.	venostomy				
	-	/			
		S			
	DEFINITION:_			 	
13.	phlebotomy				
	-	/			
	CF	S S			
	DEFINITION:			 	
14.	ventriculogra	phy			
	CF	/S			
	DEFINITION:_			 	
15.	phlebitis				
	-	/			
		S S			
	DEFINITION:_			 	
16.	angioplasty				
		/			
	CF	S			
	DEFINITION:_			 	
17.	endovascular				
		/	/		
	P	/R	S		
	DEFINITION:				
18.	arteriogram				
		/			
	CF	/S			
	DEFINITION:				

medium

electrocardiogram of the heart recorded during controlled physical exercise

Identify the structures of the heart by writing the missing words in the spaces provided:



Write out the expanded term for each abbreviation:

55.	PVC
56.	PDA
	ACS
	ICD
	CHF
	CAD
	HTN

95.	bradycardia	
96.	diastole	

Circle the combining form that corresponds to the meaning given:

97.	chest	phleb/o	sphygm/o	pector/o
98.	vein	aort/o	phleb/o	varic/o
99.	vessel	angi/o	arteri/o	coron/o
100.	heart	ven/o	coron/o	cardi/o
101.	fatty paste	aort/o	ather/o	atri/o
102.	circle	cardi/o	coron/o	sphygm/o
103.	pulse	sphygm/o	steth/o	thromb/o
104.	clot	atri/o	angi/o	thromb/o
105.	artery	arteri/o	angi/o	aort/o



MEDICAL RECORD ANALYSIS

Medical Record 5-1

PROGRESS NOTE

- S: This 54 y.o. & was admitted to CCU with onset of acute anterior chest pain radiating to the left shoulder and SOB; pt underwent a CABG \times 4 six months ago.
- O: BP 190/110, P 100, R 72, T 38°C On PE, pt was in moderate to severe distress. An ECG showed sinus tachycardia, and a CXR revealed left ventricular hypertrophy.
- A: R/O MI
- **P:** Order blood enzyme measurement STAT Echocardiogram CT scan of chest

QUESTIONS ABOUT MEDICAL RECORD 5-1

- 1. What is the patient's CC?
 - a. severe angina
 - b. angina developing slowly over time
 - c. enlargement of the heart
 - d. fast heart rate
 - e. slow heart rate
- 2. Describe the procedure that the patient underwent 6 months ago:
 - a. surgery to dilate and open narrowed portions of coronary arteries
 - b. diversion of blood flow around occluded coronary arteries
 - c. replacement of a diseased heart valve
 - d. coring of the lining of an artery to remove a clot
 - e. heart transplant
- 3. Where was the patient treated?
 - a. outpatient medical office
 - b. outpatient emergency room
 - c. inpatient intensive care
 - d. inpatient coronary care
 - e. outpatient cardiology department
- 4. What type of physician is most appropriate to provide initial care and assessment of this patient?
 - a. ER physician
 - b. internist
 - c. gerontologist
 - d. cardiovascular surgeon
 - e. cardiologist

- 5. What did the electrical picture of the heart reveal?
 - a. extremely rapid but regular contractions of the heart
 - b. slow heart rate
 - c. chaotic, irregular contractions of the heart
 - d. fast heart rate
 - e. interference with normal electrical conduction of the heart known as a block
- 6. What was the assessment?
 - a. patient may have had a heart attack
 - b. patient may be suffering from right heart failure
 - c. patient has congestive heart failure
 - d. patient may have high blood pressure
 - e. patient may have an enlarged heart
- 7. What were the objective findings of the chest radiograph?
 - a. unknown
 - b. increase in size of left ventricle
 - c. vessel disease
 - d. dead heart muscle
 - e. fast heart rate
- 8. Identify the x-ray imaging procedure ordered in the plan:
 - a. sonogram of heart
 - b. chest radiography
 - c. blood pressure
 - d. computed tomography
 - e. biochemistry panel

Medical Record 5-2

FOR ADDITIONAL STUDY

Richard Stratten has had serious heart problems for more than 10 years and has undergone two operations. During the past six months, he has developed increasing pain in the chest and is having more trouble breathing. His cardiologist, Dr. Charles Feingold, has now admitted him to Central Medical Center for further tests. Medical Record 5-2 is the history and physical examination report dictated by Dr. Feingold after his examination of Mr. Stratten.

Read Medical Record 5-2 (pages 266–269), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 5-2

_	
1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below:
	obtuse
	dyspnea (dyspneic)
	hiatal hernia
	basilar rales
	visceromegaly
	clubbing
2.	In your own words (not using medical terminology), briefly describe why Mr. Stratten has been admitted to the hospital and what test he will be undergoing:
3.	Name the diagnosis that underlies the nature of Mr. Stratten's heart conditions:
	Briefly describe this diagnosis using nonmedical language:
	-
4.	Identify the surgical procedure noted in the history that was performed initially to treat Mr. Stratten's heart disease:
	a. dilation of narrow occluded coronary arteries
	b. replacement of occluded arteries with transplanted portion of vein
	c. replacement of a diseased heart valve
	d. coring of the lining of an artery to remove a thrombus
	e. heart transplant

Medical Record 5-2: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

HISTORY

CHIEF COMPLAINT:

The patient is admitted for heart catheterization and coronary arteriography with a view of possible cardiac transplantation.

HISTORY OF PRESENT ILLNESS:

The patient is a 53-year-old Caucasian male who has had a known history of coronary artery disease. The patient had initial 4-vessel bypass surgery 10 years ago on July 18, 20xx, at which time the patient had a saphenous vein bypass graft to the left anterior descending, diagonal, obtuse marginal, and right coronary artery.

Eight years later, on May 15, 20xx, the patient was rehospitalized at Central Medical Center because of acute chest pain with electrocardiogram changes consistent with acute inferior wall infarction for which the patient was given TPA. Following that, the patient had dramatic improvement in terms of electrocardiogram changes and symptoms and subsequently underwent reevaluation, including heart catheterization and coronary arteriography. This revealed the following findings:

Native right coronary artery, left anterior descending, and circumflex were all totally occluded. The bypass graft to the left anterior descending had an 80% stenosis proximally and was totally occluded distally. Circumflex was previously totally occluded. Bypass graft to the obtuse marginal had a 70% occlusion followed by 90% occlusion at the insertion site of the graft. The right coronary artery graft had 95-98% stenosis. This diagonal graft was previously demonstrated to be totally occluded.

Because of this, the patient underwent a second bypass surgery on May 25, 20xx, at which time the patient had a left internal mammary graft to the left anterior descending and right internal mammary graft to the diagonal. The patient also had a saphenous vein bypass graft to the obtuse marginal and right coronary artery.

Since that time, the patient has continued to have intermittent angina, particularly within the last six months or so. In addition, the patient has gotten progressively weaker and dyspneic.

(continued)

HISTORY AND PHYSICAL PAGE 1

PT. NAME: STRATTEN, R.

ID NO: ROOM NO:

ADM. DATE: October 15, 20xx ATT. PHYS: C. FEINGOLD, M.D.

Medical Record 5-2: For Additional Study (Continued)

CENTRAL MEDICAL CENTER

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HISTORY

At the present time, the patient is taking Prinivil 5 mg daily in a.m., Procainamide 500 mg q 6 h, Lasix 80 mg b.i.d., Lipitor 10 mg daily, Lanoxin 0.25 mg daily, Aspirin 81 mg daily, Atenolol 10 mg daily, and Nitro-Dur 0.4 mg/hr patch, apply daily q a.m. and remove h.s.

Because of increasing symptoms, the patient is being evaluated for cardiac transplant. The patient is undergoing heart catheterization for evaluation.

PAST MEDICAL HISTORY:

PAST ILLNESSES: There is no prior history of hypertension or diabetes. See above regarding previous coronary bypass surgery and myocardial infarctions.

The patient has a known hiatal hernia, but it is asymptomatic at this time.

ALLERGIES: None known.

MEDICATIONS: See above.

PREVIOUS OPERATIONS: See above.

FAMILY HISTORY:

Father died of coronary artery disease at age 50. Paternal uncle also died of coronary artery disease. Maternal uncle and grandfather are both diabetic. The patient has no siblings. The remainder of family history is noncontributory.

SOCIAL HISTORY:

MARITAL HISTORY: Single.

HABITS: The patient is a nonsmoker and denies drinking ethanolic beverages.

INVENTORY BY SYSTEMS:

Noncontributory. There is no prior history of transient ischemic attack or claudication.

(continued)

HISTORY AND PHYSICAL PAGE 2

PT. NAME: S

STRATTEN, R.

ID NO:

ROOM NO:

ADM. DATE: October 15, 20xx ATT. PHYS: C. FEINGOLD, M.D.

Medical Record 5-2: For Additional Study (Continued)

CENTRAL MEDICAL CENTER

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PHYSICAL EXAMINATION

GENERAL:

The patient is a well-developed, well-nourished Caucasian male who is not in acute distress.

VITAL SIGNS:

Blood Pressure: 120/80. Pulse: 70 and regular.

HEENT:

HEAD: Normocephalic, atraumatic.

NECK: Neck veins are essentially normal. There are no carotid bruits.

CHEST:

HEART: Revealed cardiomegaly. There is no murmur. There is an equivocal third heart sound.

LUNGS: There are a few basilar rales.

ABDOMEN:

No visceromegaly. The bowel sounds are normal. No masses or tenderness.

RECTAL:

Deferred.

EXTREMITIES:

No clubbing, cyanosis, or peripheral edema. The peripheral pulses are intact.

NEUROLOGIC:

Physiologic.

IMPRESSION:

CORONARY ARTERY DISEASE WITH PREVIOUS ANTERIOR AND INFERIOR WALL INFARCTION STATUS POST PREVIOUS CORONARY BYPASS SURGERY x 2 WITH PROGRESSIVE INCREASE IN SYMPTOMATOLOGY IN TERMS OF ANGINA AND DYSPNEA WITH PROBABLE END-STAGE CARDIOMYOPATHY.

(continued)

HISTORY AND PHYSICAL PAGE 3

PT. NAME: STRATTEN, R.

ID NO:

ROOM NO:

ADM. DATE: October 15, 20xx ATT. PHYS: C. FEINGOLD, M.D.

Medical Record 5-2: For Additional Study (Continued)

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HISTORY AND PHYSICAL

The details of heart catheterization and coronary angiography have been discussed with the patient, including the risks and potential complications. The patient understands and wishes to proceed. This will be performed on October 16, 20xx.

C. Feingold, M.D.

CF:ti

D: 10/19/20xx T: 10/20/20xx

HISTORY AND PHYSICAL Page 4

PT. NAME: STRATTEN, R.

ID NO: ROOM NO:

ADM. DATE: October 15, 20xx ATT. PHYS: C. FEINGOLD, M.D.

ANSWERS TO PRACTICE EXERCISES

- 1. angio/graphy CF S vessel/process of recording
- 2. varic/osis R S swollen, twisted vein/condition or increase
- 3. pector/al R S chest/pertaining to
- 4. vaso/spasm CF vessel/involuntary contraction
- 5. ven/ous R S vein/pertaining to
- 6. thrombo/phleb/itis R

clot/vein/inflammation

- 7. vasculo/path/y CF R S vessel/disease/condition or process of
- 8. athero/genesis CF fatty paste (lipids)/origin or production
- 9. stetho/scope **CF** S chest/instrument for examination
- 10. myo/card/ium CF R muscle/heart/structure or tissue
- 11. aorto/plasty **CF** aorta/surgical repair or reconstruction
- 12. veno/stomy CF vein/creation of an opening

- 13. phlebo/tomy **CF** S vein/incision
- 14. ventriculo/graphy CF S ventricle/process of recording
- 15. phleb/itis R vein/inflammation
- 16. angio/plasty CF vessel/surgical repair or reconstruction
- 17. endo/vascul/ar Р R within/vessel/ pertaining to
- 18. arterio/gram **CF** S artery/record
- 19. ather/ectomy R fat (lipids)/excision or removal
- 20. intra/cardi/ac Р R S within/heart/ pertaining to
- 21. h 22. o
- 23. n
- 24. i 25. g
- 26. j
- 27. a
- 28. c 29. 1
- 30. e
- 31. m 32. d
- 33. k
- 34. f 35. b
- 36. congenital anomalies
- 37. arteriosclerosis

- 38. arrhythmia or dysrhythmia
- 39. cardiomyopathy
- 40. anastomosis
- 41. gallop
- 42. echocardiogram
- 43. cor pulmonale or right ventricular failure
- 44. coronary angiogram
- 45. stress electrocardiogram
- 46. atrial septum
- 47. right atrium
- 48. tricuspid valve
- 49. right ventricle
- 50. left atrium
- 51. aortic valve
- 52. pulmonary semilunar valve
- 53. left ventricle
- 54. ventricular septum
- 55. premature ventricular contraction
- 56. patent ductus arteriosus
- 57. acute coronary syndrome
- 58. implantable cardioverter defibrillator
- 59. congestive heart failure
- 60. coronary artery disease
- 61. hypertension
- 62. mitral valve prolapse
- 63. percutaneous coronary intervention
- 64. ventricular septal defect
- 65. k
- 66. e
- 67. h
- 68. b
- 69. a
- 70. j
- 71. 1
- 72. i 73. d
- 74. f
- 75. g
- 76. c
- 77. ventricle
- 78. aorta

79. thrombus	88. thrombophlebitis	97. pector/o
80. myocardial	89. diaphoresis	98. phleb/o
81. hypotension	90. defibrillation	99. angi/o
82. diastole	91. antiarrhythmic	100. cardi/o
83. ischemia	92. vasodilation	101. ather/o
84. occlusion	93. anticoagulant	102. coron/o
85. infarct	94. hypertension	103. sphygm/o
86. aneurysm	95. tachycardia	104. thromb/o
87. atherosclerotic	96. systole	105. arteri/o

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 5-1: Progress Note

1. a 2. b 3. d 4. e 5. d 6. a 7. b 8. d

Medical Record 5-2: For Additional Study

See CD-ROM for answers.





CHAPTER

6

Blood and Lymphatic Systems

✓ Chapter 6 Checklist	LOCATION
☐ Read Chapter 6: Blood and Lymphatic Systems and complete all programmed review segments.	pages 273-299
☐ Review the starter set of flash cards and term components related to Chapter 6.	back of book
☐ Complete the Chapter 6 Practice Exercises and Medical Record Analysis 6-1.	pages 303-309
☐ Complete Medical Record Analysis 6-2 For Additional Study.	pages 310-313
☐ Complete the Chapter 6 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 6 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 6 terms.	CD-ROM

BLOOD AND LYMPHATIC SYSTEMS OVERVIEW

The blood is responsible for:

- 🌞 Transporting oxygen, nutrients, and hormones to body cells
- Carrying wastes away from the cells

The lymphatic system functions to:

- Protect the body by filtering microorganisms and foreign particles from the lymph, a clear fluid collected from body tissues
- Support the activities of the lymphocytes in the immune response
- Maintain the body's internal fluid environment as an intermediary between the blood in the capillaries and tissue cells
- Carry fats away from the digestive organs



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
blast/o (also a suffix, -blast)	germ or bud
chrom/o, chromat/o	color
chyl/o	juice
cyt/o	cell
hem/o, hemat/o	blood
immun/o	safe
lymph/o	clear fluid
morph/o	form
myel/o	bone marrow or spinal cord
phag/o	eat or swallow
plas/o	formation
reticul/o	a net
splen/o	spleen
thromb/o	clot
thym/o	thymus gland



Programmed Review: Combining Forms

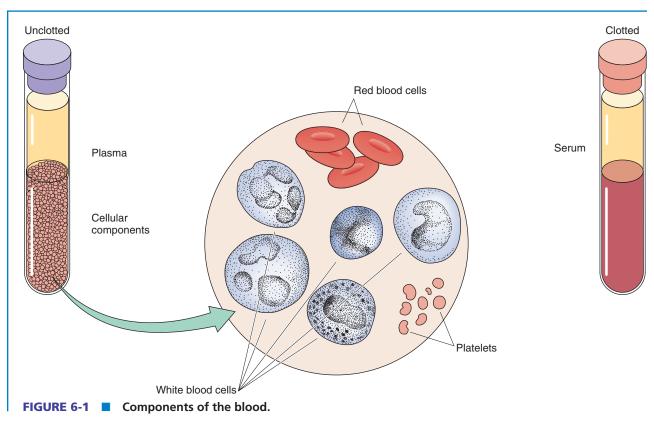
ANSWERS	REVIEW
blast/o	6.1 The combining form meaning germ or bud is, as in
	the term blastogenesis, which refers to the origin or production of
-blast	cells by budding. The suffix from this combining form is
	Hemocytoblasts (a term formed from the combination of -blast with
cell, blood	cyt/o, meaning, and hem/o meaning) are the
	primitive stem cells in the bone marrow that develop into blood cells.
red	An erythroblast develops into an erythrocyte, or a blood cell.
chromat/o	6.2 The combining form <i>chrom/o</i> or means
color	For example, chromone refers to plant pigments. Recall
condition of	that the suffix -ism means; therefore,
	chromatism is a condition of abnormal pigmentation.

ANSWERS	REVIEW
juice	6.3 The combining form <i>chyl/o</i> means or fluid. Chyle is a pale yellow fluid from the intestine that is carried by the
blood chyle	lymphatic system. The suffix <i>-emia</i> refers to a condition; thus, chylemia means the presence of in the blood.
hemat/o hem/o formation blood	6.4 Hematology, a term made from the combining form, meaning blood, is the medical study of the blood. Another combining form for blood is, as in hemostat, which is an agent or device that stops the flow of blood from a vessel. Recall that the suffix <i>-poiesis</i> means Therefore, hemopoiesis refers to the process of formation and development of various types of cells.
immun/o immunocompromised	6.5 The combining form meaning safe is The immune system helps to keep the body safe from infectious disease. Both the blood and lymphatic systems are involved in the immune system. Someone whose immune system has been compromised by disease is said to be
clear	6.6 The combining form <i>lymph/o</i> means fluid. Lymph is a clear fluid, collected from body tissues, that flows through lymphatic vessels and, eventually, into the venous blood circulation. Using the suffix that means tumor, a neoplasm of the lymphatic system is called a
eat cell eats condition of	6.7 The combining form <i>phag/o</i> means or swallow. The suffix <i>-cyte</i> refers to a A phagocyte therefore is a cell that bacteria, foreign particles, and other cells. Using the suffix <i>-osis</i> , which generally means increase or, phagocytosis is the process or condition of phagocytes ingesting other solid substances.
formation without condition of	6.8 <i>Plas/o</i> is a combining form meaning Using the prefix <i>a-</i> , meaning, and the suffix <i>-ia</i> , meaning, aplasia is a condition in which a formation (tissue or organ) is absent or defective.



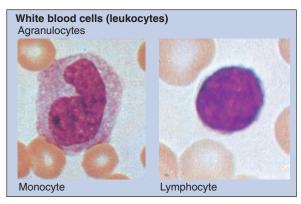
Self-Instruction: Anatomic Terms in the Blood System

TERM	MEANING		
TERMS RELATED TO BLO	TERMS RELATED TO BLOOD FLUID (Fig. 6-1)		
plasma plaz' mă	liquid portion of the blood and lymph; contains water, proteins, and cellular components (i.e., leukocytes, erythrocytes, and platelets)		
serum sēr'ŭm	liquid portion of the blood that remains after clotting		
CELLULAR COMPONENTS OF THE BLOOD (Fig. 6-2)			
erythrocyte ĕ-rith' rō-sīt hemoglobin	red blood cell; transports oxygen and carbon dioxide the protein-iron compound in erythrocytes that transports		
hē-mō-glō' bin	oxygen and carbon dioxide		
leukocyte lū'kō-sīt	white blood cell; protects the body from harmful invading substances		
granulocytes gran' yū-lō-sītz	a group of leukocytes containing granules in their cytoplasm		
neutrophil nū'trō-fil	a granular leukocyte, named for the neutral stain of its granules, that fights infection by swallowing bacteria (phagocytosis) (<i>neutr</i> = neither; <i>phil</i> = attraction for)		



CELLULAR COMPONENTS OF THE BLOOD





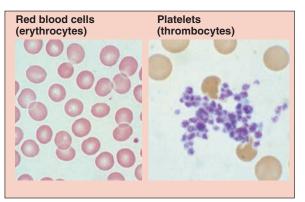


FIGURE 6-2 Cellular components of the blood.

TERM	MEANING
polymorphonuclear (PMN) leukocyte pol'ē-mōr'fō-nū' klē-ăr lū'kō-sīt	another term for neutrophil, referring to the many segments in its nucleus (<i>poly</i> = many; <i>morpho</i> = form; <i>nucleus</i> = kernel)
eosinophil ē-ō-sin'ō-fil	a granular leukocyte, named for the rose-colored stain of its granules, that increases in allergic and some infectious reactions (<i>eos</i> = dawn-colored [rosy]; <i>phil</i> = attraction for)
basophil bā'sō-fil	a granular leukocyte, named for the dark stain of its granules, that brings anticoagulant substances to inflamed tissues (baso = base; phil = attraction for)
agranulocytes ā-grăn'ū-lō-sītz	a group of leukocytes without granules in their nuclei
lymphocyte lim' fō-sīt	an agranulocytic leukocyte that is active in the process of immunity; the three categories of lymphocytes are T cells (thymus-dependent), B cells (bone marrow-derived), and natural killer (NK) cells
monocyte mon'ō-sīt	an agranulocytic leukocyte that performs phagocytosis to fight infection (<i>mono</i> = one)
platelets plāt' lets	thrombocytes; cell fragments in the blood that are essential for blood clotting (coagulation)



Programmed Review: Anatomic Terms in the Blood System

ANSWERS	REVIEW
plasma serum	6.15 The liquid portion of the blood and lymph is called The plasma contains proteins, cells, and other substances. After blood clots, the liquid portion that remains is called
cell red red, cell hemoglobin blood	6.16 Recall that <i>-cyt/o</i> is a combining form meaning, and that <i>erythr/o</i> is a combining form meaning Therefore, an erythrocyte is a blood Erythrocytes transport oxygen and carbon dioxide. Oxygen and carbon dioxide bond to the protein-iron compound contained in the erythrocytes, which is called (from the combining form <i>hem/o</i> , meaning).
white leukocyte granulocytes without agranulocytes	blood cell is a There are many types of leukocytes in the blood, but they can be divided into two general categories: those with granules in their cytoplasm and those without granules in their cytoplasm. Leukocytes with granules are called Because the prefix <i>a</i> - means, the term for leukocytes without granules is
eosinophil	6.18 Several types of leukocytes are named according to how they appear when stained, or by which stain they attract (<i>phil</i> = attraction for). A neutrophil is a leukocyte in which the granules stain neutrally or without color; a neutrophil has an attraction for neither (<i>neutr</i>) color stain. An is a leukocyte in which the granules stain (attract) a rose color (<i>eos</i> = rosy color). Finally, another type of leukocyte has granules that stain (attract) a dark base color (<i>baso</i> = base); this type is called a
polymorphonuclear	6.19 Another term for a neutrophil is (PMN) leukocyte. This term comes from the many segments in the nucleus.
lymphocyte	6.20 An agranulocytic leukocyte in the lymphatic system that is active in the process of immunity is called a A monocyte, which is another agranulocytic leukocyte, performs phagocytosis to fight

ANSWERS	REVIEW
platelet	6.21 Another term for a thrombocyte is The
clot	combining form <i>thromb/o</i> means; therefore, platelets
clotting	function in blood



Self-Instruction: Anatomic Terms in the Lymphatic System (Fig. 6-3)

Study the following:

i-myū'ni-tē

TERM	MEANING	
ORGANS OF THE LYMPHATIC SYSTEM		
thymus thī' mŭs	primary gland of the lymphatic system, located within the mediastinum, that helps to maintain the body's immune response by producing T lymphocytes	
spleen splen	organ between the stomach and the diaphragm that filters out aging blood cells, removes cellular debris by performing phagocytosis, and provides an environment for lymphocytes to initiate immune responses	
STRUCTURES OF THE LY	MPHATIC SYSTEM	
lymph limf	fluid that is circulated through the lymph vessels	
lymph capillaries limf kap' i-lār-ēz	microscopic vessels that draw lymph from tissues to the lymph vessels	
lymph vessels limf ves'ĕlz	vessels that receive lymph from the lymph capillaries and circulate it to the lymph nodes	
lacteals lak' tē-ălz	specialized lymph vessels in the small intestine that absorb fat into the bloodstream (<i>lacteus</i> = milky)	
chyle kīl	white or pale yellow substance in lymph that contains fatty substances absorbed by the lacteals	
lymph nodes limf nōdz	many small, oval structures that filter lymph from the lymph vessels; major locations include the cervical, axillary, and inguinal regions	
lymph ducts limf dūktz	collecting channels that carry lymph from the lymph nodes to the veins	
right lymphatic duct rīt lim-fat' ik dŭkt	receives lymph from the right upper part of the body	
thoracic duct thō-ras' ik dŭkt	receives lymph from the left side of the head, neck, chest, abdomen, left arm, and lower extremities	
IMMUNITY		
immunity	process of disease protection induced by exposure to an antigen	

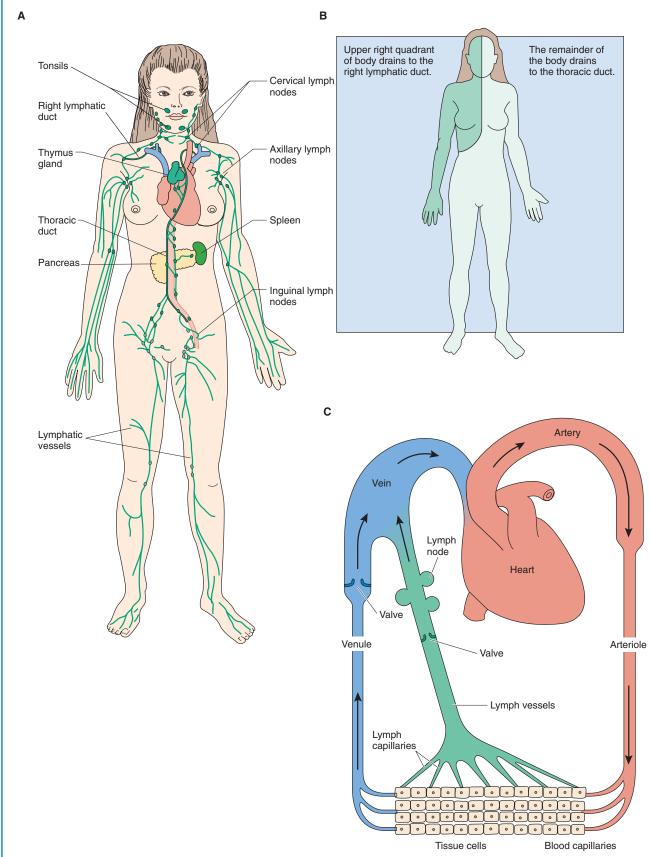


FIGURE 6-3 Lymphatic system. A. Lymph structures. B. Lymph drainage. C. Blood and lymph circulation.

TERM	MEANING
antigen an' ti-jen	a substance that, when introduced into the body, causes the formation of antibodies against it
antibody an' tē-bod-ē	a substance produced by the body that destroys or inactivates an antigen that has entered the body
active immunity ak' tiv i-myū' ni-tē	a long-lasting immunity that results from stimulating the body to produce its own antibodies; developed either <i>naturally</i> , in response to an infection, or <i>artificially</i> , in response to the administration of a vaccine
passive immunity pas' iv i-myū' ni-tē	a short-lasting immunity that results from foreign antibodies that are conveyed either <i>naturally</i> , through the placenta to a fetus, or <i>artificially</i> , by injection of a serum containing antibodies

Programmed Review: Anatomic Terms in the Lymphatic System

ANSWERS	REVIEW
thymus	6.22 Located in the mediastinum, the gland produces T lymphocytes for the body's immune response. This term comes
thym/o	from the combining form
spleen splenectomy	6.23 Aging blood cells are filtered out in the, which also removes cellular debris by performing phagocytosis. The removal of this organ is called a
lymph clear	6.24 The fluid circulating through the lymph vessels is called The meaning of the combining form <i>lymph/o</i> reminds us that this fluid is
capillaries	6.25 The microscopic vessels that draw lymph from body tissues to the lymph vessels are called lymph The same term is used in the circulatory system for the tiny vessels connecting arteries and veins.
lacteals	6.26 In addition to lymph capillaries, which collect lymph from body tissues, special lymph vessels in the intestine, called, absorb fat. This liquid in lymph absorbed by the lacteals is called
nodes ducts, lymphatic	6.27 Lymph vessels carry lymph to the lymph, which filter the lymph. Lymph is then carried from the lymph nodes to the veins via lymph The right duct receives lymph from the right upper part of the body, and the

ANSWERS	REVIEW
thoracic	duct receives lymph from the left side of the head,
extremities	neck, chest, left arm, and lower
antibody immunity antigen, antibody	6.28 The body protects itself from infectious disease in several ways. An antigen is a substance that, when introduced into the body, causes formation of an against it. This process of disease protection is called Exposure to an starts the process, and the destroys or inactivates the antigen.
active immunity	6.29 Antibodies that develop naturally, after contracting an infection, or artificially, after administering a vaccine, result in immunity. Antibodies that are conveyed naturally through the placenta to a fetus result in passive The difference between active and passive in this case is whether the body itself actively makes the antibodies or passively receives them from outside.

Self-Instruction: Symptomatic Terms

TERM	MEANING
RELATED TO BLOOD	
microcytosis (Fig. 6-4, B) mī'krō-sī-tō'sis	presence of small red blood cells
macrocytosis (Fig. 6-5) mak'rō-sī-tō'sis	presence of large red blood cells

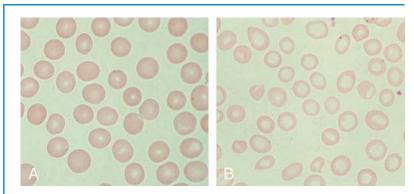


FIGURE 6-4 A blood smear showing normal erythrocytes (A) compared with a blood smear revealing microcytic-hypochromic erythrocytes in a patient with iron deficiency anemia (B).



FIGURE 6-5 Photomicrograph of a blood smear from a patient with pernicious anemia reveals macrocytosis, anisocytosis, and poikilocytosis.

TERM	MEANING
anisocytosis (see Fig. 6-5) an-ī'sō-sī-tō'sis	presence of red blood cells of unequal size (<i>an</i> = not, without; <i>iso</i> = equal)
poikilocytosis (see Fig. 6-5) poy'ki-lō-sī-tō'sis	presence of large, irregularly shaped red blood cells (poikilo = irregular)
reticulocytosis re-tik'ū-lō-sī-tō'sis	an increased number of immature erythrocytes in the blood
erythropenia ĕ-rith-rō-pē'nē-ă	an abnormally reduced number of red blood cells
lymphocytopenia lim'fō-sī-tō-pē'nē-ă	an abnormally reduced number of lymphocytes
neutropenia nū' trō-pē' nē-ă	a decreased number of neutrophils
pancytopenia pan' sī-tō-pē' nē-ă	an abnormally reduced number of all cellular components in the blood
thrombocytopenia throm' bō-sī-tō-pē' nē-ă	an abnormally decreased number of platelets in the blood, impairing the clotting process
hē-mol'i-sis	breakdown of the red blood cell membrane

RELATED TO THE LYMPHATIC SYSTEM

immunocompromised im'yū-nō-kom'prō-mīzd	impaired immunologic defenses caused by an immunodeficiency disorder or by therapy with immunosuppressive agents
immunosuppression im' yū-nō-sŭ-presh'ŭn	impaired ability to provide an immune response
lymphadenopathy lim-fad'ĕ-nop'ă-thē	enlarged (diseased) lymph nodes
splenomegaly splē-nō-meg'ă-lē	enlargement of the spleen



Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
increase cytosis macrocytosis	6.30 The suffix <i>-osis</i> can mean either a condition of or an In either case, the suffix is used with symptomatic terms to indicate an abnormal or unusual condition. The presence of small red blood cells is called micro, and the presence of large red blood cells is called
anisocytosis poikilocytosis	6.31 Red blood cells also may be present in unequal sizes. The presence of red blood cells of unequal size (<i>aniso</i> = unequal) is termed The presence of large, irregularly shaped (<i>poikilo</i> = irregular) red blood cells is called
net	6.32 The combining form <i>reticul/o</i> means As mentioned previously, a reticulocyte is a young red blood cell (so named because of the network of substances in the cell). The condition of an increased number of immature erythrocytes in the blood is called
reduction lymphocytopenia thrombocytopenia erythropenia	6.33 Recall that the suffix <i>-penia</i> means an abnormal Several symptomatic terms involving blood cells are formed with this suffix. An abnormally reduced number of lymphoctyes is called An abnormal reduction in the number of platelets (thrombocytes) is termed An abnormally reduced number of erythrocytes can be termed erythrocytopenia, but the shorter term,, generally is used.
all pancytopenia neutropenia	6.34 The prefix <i>pan-</i> means An abnormally reduced number of all types of blood cells is therefore called Like the shorter term erythropenia, the term for a reduced number of neutrophils uses just one combining form with the suffix <i>-penia</i> :
-lysis hemolysis	 6.35 The suffix meaning breakdown or dissolution is The term for the breakdown of the red blood cell membrane uses the combining form for blood (in effect, the blood itself breaks down): 6.36 Some drugs or disease states suppress the body's ability to
immunosuppression	provide an immune response; this is called

ANSWERS	REVIEW
immunocompromised	A patient with impaired immunologic defenses caused by a disorder or by immunosuppressive agents is said to be
mmunocompromised	
	6.37 The combining form <i>path/o</i> simply means disease, as in the term pathology. The combining form <i>aden/o</i> means gland or node. A
	disease state in which lymph nodes are enlarged is called
lymphadenopathy	
enlargement	6.38 The symptomatic suffix <i>-megaly</i> refers to an
	An enlarged spleen, which may result from several different diseases,
splenomegaly	is called



Self-Instruction: Diagnostic Terms

TERM	MEANING
acquired immunodeficiency syndrome (AIDS) ă-kwīrd' im' yŭ-nō-dē-fish' en-sē sin' drōm	a syndrome caused by the human immunodeficiency virus (HIV) that renders immune cells ineffective, permitting opportunistic infections, malignancies, and neurologic diseases to develop; transmitted sexually or through contaminated blood
anemia ă-nē' mē-ă	a condition of reduced numbers of red blood cells, hemoglobin, or packed red cells in the blood, resulting in a diminished ability of red blood cells to transport oxygen to the tissues
aplastic anemia ā-plas' tik ă-nē' mē-ă	a normocytic-normochromic type of anemia characterized by the failure of bone marrow to produce red blood cells
iron deficiency anemia (see Fig. 6-4, B) ī'ĕrn de-fish'en-sē ă-nē'mē-ă	a microcytic-hypochromic type of anemia characterized by a lack of iron that affects the production of hemoglobin and is characterized by small red blood cells containing low amounts of hemoglobin
pernicious anemia (see Fig. 6-5) pĕr-nish'ŭs ă-nē' mē-ă	a macrocytic-normochromic type of anemia characterized by an inadequate supply of vitamin B_{12} , causing red blood cells to become large, varied in shape, and reduced in number
autoimmune disease aw-tō-i-myūn' di-zēz'	any disorder characterized by abnormal function of the immune system that causes the body to produce antibodies against itself, resulting in tissue destruction or loss of function; rheumatoid arthritis and lupus are examples of autoimmune diseases (<i>auto</i> = self)
erythroblastosis fetalis ĕ-rith'rō-blas-tō'sis fē-tă'lis	a disorder that results from the incompatibility of a fetus with Rh-positive blood and a mother with Rh-negative blood, causing red blood cell destruction in the fetus; a blood transfusion is necessary to save the fetus

TERM	MEANING
Rh factor r-h fak' tōr	presence or lack of antigens on the surface of red blood cells, which causes a reaction between Rh-positive blood and Rh-negative blood
Rh positive r-h poz'i-tiv	presence of antigens
Rh negative r-h neg'ă-tiv	absence of antigens
hemochromatosis hē'mō-krō-mă-tō'sis	hereditary disorder with an excessive buildup of iron deposits in the body
hemophilia hē-mō-fil'ē-ă	a group of hereditary bleeding disorders caused by a defect in clotting factors necessary for the coagulation of blood
leukemia lū-kē' mē-ă	chronic or acute malignant (cancerous) disease of the blood-forming organs, characterized by abnormal leukocytes in the blood and bone marrow
myelodysplasia mī'ĕ-lō-dis-plā' zē-ă	disorder within the bone marrow characterized by a proliferation of abnormal stem cells (cells that give rise to different types of blood cells); usually develops into a specific type of leukemia
lymphoma lim-fō' mă	any neoplastic disorder of lymph tissue, usually malignant, as in Hodgkin disease
metastasis mĕ-tas' tă-sis	process by which cancer cells are spread by blood or lymph circulation to a distant organ; the plural form, metastases, indicates spreading to two or more distant sites
mononucleosis mon'ō-nū-klē-ō'sis	condition caused by the Epstein-Barr virus and characterized by an increase in mononuclear cells (monocytes and lymphocytes) in the blood along with enlarged lymph nodes (lymphadenopathy), fatigue, and sore throat (pharyngitis)
polycythemia pol'ē-sī-thē'mē-ă	increased number of erythrocytes and hemoglobin in the blood
septicemia sep-ti-sē'mē-ă	systemic disease caused by infection with microorganisms and their toxins in circulating blood

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
acquired	6.39 AIDS is the acronym for
immunodeficiency syndrome	, which is
	caused by the human immunodeficiency virus (HIV).

ANSWERS	REVIEW
blood	6.45 The diagnostic suffix <i>-emia</i> refers to a condition. A malignant blood disease marked by abnormal
leukemia	white blood cells (leukocytes) is called
	A disorder in the bone marrow that usually develops into
	leukemia is built from the combining form <i>myel/o</i> , meaning
	bone marrow; the prefix <i>dys-</i> , meaning faulty; and the
formation myelodysplasia	suffix <i>-plasia</i> , meaning a condition of This disorder is called
пустопуврнавна	
	6.46 Also built with the suffix <i>-emia</i> , the term for an increase in hamaglabin and the number of anythrogytes in
	increase in hemoglobin and the number of erythrocytes in the blood begins with the prefix <i>poly-</i> , which means
many, polycythemia	This disorder is called
-oma	6.47 Recall that the suffix meaning tumor is
lymphoma	A tumor of lymph tissue is called a
beyond	6.48 The prefix <i>meta-</i> means, after, or
	change. The term for the spread of cancer cells beyond the
	original site of the tumor through blood or lymph is
metastasis	·
	6.49 Monocytes and lymphocytes are mononuclear cells.
mononucleosis	The viral condition characterized by an increase in both types is called The suffix <i>-osis</i>
increase	means condition of or
	6.50 Sepsis is from the Greek word for putrefaction, indicating infection. A systemic condition caused by
septicemia	infection in the blood is therefore termed



Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
BLOOD STUDIES	
phlebotomy fle-bot'ŏ-mē venipuncture ven'i-pŭnk-chūr	incision into or puncture of a vein to withdraw blood for testing

wīt blŭd kownt

TEST OR PROCEDURE EXPLANATION blood chemistry test of the fluid portion of blood to measure the amounts of blŭd kem'is-trē its chemical constituents (e.g., glucose and cholesterol) specialized batteries of automated blood chemistry tests blood chemistry panels blŭd kem' is-trē păn' lz performed on a single sample of blood; used as a general screen for disease or to target specific organs or conditions (e.g., metabolic panel, lipid panel, and arthritis panel) basic metabolic panel battery of tests used as a general screen for disease; includes tests for calcium, carbon dioxide (CO₂), chloride, creatinine, (BMP) bā'sik met-ă-bol'ik păn'l glucose, potassium, sodium, and blood urea nitrogen (BUN) tests performed in addition to the basic panel for expanded comprehensive metabolic panel screening: albumin, bilirubin, alkaline phosphatase, protein, **(CMP)** (Fig. 6-6) alanine aminotransferase (ALT), and aspartate kom-prē-hen'siv met-ă-bol'ik aminotransferase (AST) păn'l blood culture test to determine if infection is present in the bloodstream by blŭd kŭl' chër isolating a specimen of blood in an environment that encourages the growth of microorganisms; the specimen is observed, and the organisms that grow in the culture are identified CD4 cell count a measure of the number of CD4 cells (a subset of T c-d-for sel kownt lymphocytes) in the blood; used in monitoring the course of HIV and in timing the treatment of AIDS; the normal adult range is 600–1500 cells in a given volume of blood erythrocyte sedimentation timed test that measures the rate at which red blood cells rate (ESR) settle through a volume of plasma ĕ-rith' rō-sīt sed' i-men-tā' shŭn partial thromboplastin test to determine coagulation defects, such as platelet time (PTT) disorders par'shăl throm-bō-plas'tin tīm thromboplastin substance present in tissues, platelets, and leukocytes that is throm-bō-plas' tin necessary for coagulation prothrombin time (PT) test to measure activity of prothrombin in the blood prō-throm' bin tīm prothrombin protein substance in the blood that is essential to the clotting prō-throm' bin process complete blood count a common laboratory blood test performed as a screen of **(CBC)** (Fig. 6-7) general health or for diagnostic purposes and typically kom-plēt' blŭd kownt includes the component tests that follow; test results are usually reported along with normal values so that the clinician can interpret the results based on the instrumentation used by the laboratory; normal ranges also may vary depending on the region and climate white blood count (WBC) a count of the number of white blood cells in a given volume

of blood obtained via manual or automated laboratory methods

CENTRAL MEDICAL CENTER

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11/02/20xx 14:27

NAME : TEST, PATIENT LOC: TEST AGE: 38Y DOB: 02/03/xx MR# : TEST-221 SEX: M

ACCT# : H111111111

M63561 COLL: 11/02/20xx 13:24 REC: 11/02/20xx 13:25

COMPREHENSIVE METABOLIC PANEL

Blood Urea Nitrogen (BUN)	*30	[5 - 25]	mg/dl
Sodium	139	[135 - 153]	mEq/L
Potassium	4.2	[3.5 - 5.3]	mEq/L
Chloride	105	[101 - 111]	mEq/L
Carbon Dioxide (CO ₂)	27	[24 - 31]	mmol/L
Glucose, Random	*148	[70 - 110]	mg/dl
Creatinine	*1.5	[< 1.5]	mg/dl
SGOT (AST)	18	[10 - 42]	U/L
SGPT (ALT)	*8	[10 - 60]	U/L
Alkaline Phosphatase	58	[42 - 121]	U/L
Total Protein	6.5	[6.0 - 8.0]	G/dl
Albumin	3.7	[3.5 - 5.0]	G/dl
Amylase	33	[< 129]	U/L
Bilirubin, Total	0.7	[< 1.5]	mg/dl
Calcium, Total	9.7	[8.6 - 10.6]	mg/dl

TEST, PATIENT TEST-221 **END OF REPORT** PAGE 1

11/02/20xx 14:27

INTERIM REPORT COMPLETED

FIGURE 6-6 Comprehensive metabolic panel report. Normal ranges are in brackets [].

TEST OR PROCEDURE	EXPLANATION
red blood count (RBC) red blud kownt	a count of the number of red blood cells in a given volume of blood obtained via manual or automated laboratory methods
hemoglobin (HGB or Hgb) hē-mō-glō' bin	a test to determine the blood level of hemoglobin (expressed in grams)
hematocrit (HCT or Hct) hē' mă-tō-krit	a measurement of the percentage of packed red blood cells in a given volume of blood
blood indices blŭd in' di-sēz	calculations of RBC, HGB, and HCT results to determine the average size, hemoglobin concentration, and content of red blood cells to classify an anemia (Note: in the entries below, the term corpuscular pertains to a blood cell)
mean corpuscular (cell) volume (MCV) mēn kōr-pŭs' kū-lăr (sel) vol' yūm	calculation of the volume (size) of individual red blood cells using HCT and RBC results: MCV = HCT/RBC

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11/02/20xx 14:27

: TEST, PATIENT LOC: TEST NAME DOB: 2/2/xx AGE: 27Y SEX: M MR# : TEST-221

ACCT# : H111111111

M63558 COLL: 11/2/20xx 13:23 REC: 11/2/20xx 13:24

HEMOGRAM CBC *11.5 **WBC** [4.5 - 10.5] K/UL [4.6 - 6.2] **RBC** 5.84 M/UL [14.0 - 18.0] G/DL HGB 17.2 [42.0 - 52.0] **HCT** 50.8 % MCV 87 [82 - 92] FL MCH 29.5 [27 - 31] PG [32 - 36] G/DL MCHC 33.9 PLT 202 [150 - 450] K/UL [20 - 40] % 15 Auto Lymph % [1 - 11] % 2 Auto Mono % [50 - 75] % 82 Auto Neutro % [0 - 6] % 1 Auto Eos % [0 - 2] 0 % Auto Baso % 1.7 [1.5 - 4.0]K/UL Auto Lymph # [0.2 - 0.9] 0.2 K/UL Auto Mono # [1.0 - 7.0]9.4 K/UL Auto Neutro # [0 - 0.7] K/UL 0.1 Auto Eos # 0.0 [0 - 0.2]K/UL Auto Baso #

TEST, PATIENT TEST-221 **END OF REPORT** PAGE 1 11/02/20xx 14:27 **INTERIM REPORT**

INTERIM REPORT COMPLETE

FIGURE 6-7 Complete blood count (CBC) report. Normal ranges are in brackets [].

TEST OR PROCEDURE	EXPLANATION
mean corpuscular (cell) hemoglobin (MCH) mēn kōr-pŭs' kū-lăr (sel) hē-mō-glō' bin	calculation of the content (weight) of hemoglobin in the average red blood cell using HGB and RBC results: MCH = HGB/RBC
mean corpuscular (cell) hemoglobin concentration (MCHC) mēn kōr-pūs' kū-lăr (sel) hē-mō-glō' bin kon-sen- trā' shŭn	calculation of the average hemoglobin concentration in each red blood cell using HGB and HCT results: MCHC = HGB/HCT
differential count dif-ĕr-en' shăl kownt	determination of the number of each type of white blood cell (leukocyte) in a stained blood smear; each type is counted and reported as a percentage of the total examined

TEST OR PROCEDURE	EXPLANATION	
	Type of Leukocyte Normal Range lymphocytes 25–33% monocytes 3–7% neutrophils 54–75% eosinophils 1–3% basophils 0–1%	
red cell morphology rĕd sel mōr-fol'ŏ-jē	as part of identifying and counting the white blood cells, the condition, size, and shape of red blood cells in the background of the smeared slide are noted (e.g., anisocytosis, poikilocytosis)	
platelet count (PLT) plāt' let kownt	calculation of the number of thrombocytes in the blood; the normal adult range is 150,000–450,000 platelets in a given volume of blood	
RONE AND LYMPH STUDIES		

BONE AND LYMPH STUDIES

bone marrow aspiration (Fig. 6-8) bōn mar'ō as-pi-rā'shŭn	needle aspiration of bone marrow tissue for pathologic examination
bone marrow biopsy bōn mar'ō bī'op-sē	pathologic examination of bone marrow tissue
lymphangiogram lim-fan' jē-ō-gram	an x-ray image of a lymph node or vessel obtained after injection of a contrast medium

DIAGNOSTIC IMAGING

positron-emission tomography (PET) pŏz'i-tron ē-mish'ŭn tō-mog'ră-fē

scanning technique combining nuclear medicine and computed tomography technology to produce images of anatomy and metabolic function within the body; useful in determining the recurrence of cancers or to measure response to therapy; commonly used in evaluating lymphoma

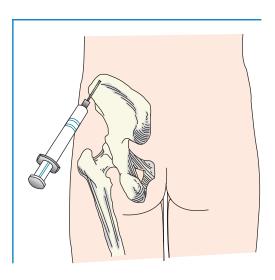


FIGURE 6-8 Bone marrow aspiration. Posterior view of the pelvic region showing a common site for bone marrow aspiration.



Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
venipuncture, phlebotomy incision	6.51 Blood studies are tests performed with samples of blood. The blood sample, often drawn by a phlebotomist, is obtained through a needle puncture (or incision) of a vein, which is called a or a Recall that the suffix <i>-tomy</i> refers to an
chemistry, panel metabolic comprehensive metabolic panel	6.52 Blood studies generally examine the chemical constituents of the blood or the physical properties of different kinds of blood cells. A test of the fluid portion of blood for the presence of chemical constituents is called a blood includes a battery of chemistry tests using a single sample of blood. Some panels target specific organs or conditions, such as a lipid or arthritis panel. Two panels of chemistry tests are used as a general or expanded screen for disease: a basic panel (BMP), and a (CMP).
culture	6.53 To determine the presence and type of an infection in the blood, a blood sample may be put in an environment that encourages the growth of microorganisms. This test is called a blood
CD4 AIDS	6.54 CD4 cells are a subset of T lymphocytes in the blood that are increased in patients who are positive for HIV. The measure of these cells, which is known as a cell count, is used in monitoring the course of HIV infection and in timing the treatment of acquired immunodeficiency syndrome ().
erythrocytes erythrocyte sedimentation	6.55 Red blood cells are also called A diagnostic test that measures how fast red blood cells settle through plasma is called the rate.
thromb/o	6.56 The combining form for clot is That root is part of the term for the substance in tissues, platelets, and leukocytes that is necessary for coagulation:

ANSWERS	REVIEW
thromboplastin partial thromboplastin prothrombin prothrombin time	The test for coagulation defects is called a time (PTT). The term for a protein substance in blood that is essential for clotting comes from a prefix meaning before and the combining form for clot: The diagnostic test that measures the activity of this protein is called a (PT).
red blood white cells HGB, Hgb hematocrit	diagnostic test that is often performed as a general screen. It includes several component tests. The RBC is a count of the number of cells in a given volume of blood. A WBC is a count of the number of in a given volume of blood. The test of the blood level of hemoglobin is often simply called a hemoglobin, and it is abbreviated as or The measurement of the percentage of packed red blood cells in a given volume of blood is called the (HCT or Hct).
indices mean corpuscular (cell) mean hemoglobin hemoglobin concentration	6.58 Different values in the CBC are used to calculate the size, makeup, and content of red blood cells to classify an anemia. These calculations are called blood The calculation of the volume (size) of individual cells is called the volume (MCV). The term mean refers to average. The calculation of the weight of hemoglobin in an average red blood cell is called the (MCH). The calculation of the mean hemoglobin concentration in each cell is called the mean corpuscular (cell) (MCHC).
platelet platelet count	6.59 Thrombocytes are counted as part of a CBC. Another term for thrombocyte is Thus, this measure is simply called a (PLT).
white, cytes phils differential count	6.60 Recall that there are several kinds of leukocytes (blood cells), such as lymphocytes, mono, neutrophils, eosino, and basophils. The study that determines the percentage of each type present in a smear of blood is called a

ANSWERS	REVIEW
morphology	6.61 When the differential count is done, the size and shape of red blood cells in the sample are also noted. This is called the red cell
aspiration bone marrow biopsy	6.62 The removal of bone marrow tissue by a needle for pathologic examination is called a bone marrow Pathologic examination of bone marrow tissue is called a
-gram lymphangiogram	6.63 The combining form <i>angi/o</i> refers to either blood or lymph vessels. The suffix meaning a record is Using these two components along with the combining form for lymph, the term is an x-ray of a lymph node or vessel.
computed tomography cancers positron-emission	6.64 Full body CT (
tomography) to determine the recurrence of cancers or to measure the response to therapy.

Self-Instruction: Operative Terms

TERM	MEANING
bone marrow transplant bōn mar'ō tranz' plant	transplantation of healthy bone marrow from a compatible donor to a diseased recipient to stimulate blood cell production
lymphadenectomy lim-fad'ĕ-nĕk' tŏ-mē	removal of a lymph node
lymphadenotomy lim-fad'ĕ-not'ŏ-mē	incision into a lymph node
lymph node dissection limf nōd di-sek' shǔn	removal of possible cancer-carrying lymph nodes for pathologic examination
splenectomy splē-nek' tŏ-mē	removal of the spleen
thymectomy thī-mek' tŏ-mē	removal of the thymus gland



Programmed Review: Operative Terms

ANSWERS	REVIEW
removal	6.65 The suffix <i>-ectomy</i> means or excision. The
splenectomy	removal of the spleen is called a The removal of
thymectomy	the thymus gland is called a The removal of a
lymphadenectomy	lymph node is called a
incision	6.66 The suffix <i>-tomy</i> , on the other hand, means
lymphadenotomy	An incision into a lymph node is called a
	6.67 Removal of possible cancer-carrying lymph nodes for
dissection	pathologic examination is called a lymph node
bone	6.68 To stimulate blood cell production inside bones, a
marrow	transplant is made from a compatible donor to a
	diseased recipient.



Self-Instruction: Therapeutic Terms

TERM	MEANING	
blood transfusion blŭd trans-fyū'zhŭn	introduction of blood products into the circulation of a recipient whose blood volume is reduced or deficient in some manner	
autologous blood aw-toľŏ-gŭs blŭd	blood donated by and stored for a patient for future personal use (e.g., upcoming surgery) (<i>auto</i> = self)	
homologous blood hŏ-mol'ō-gŭs blǔd	blood voluntarily donated by any person for transfusion to a compatible recipient (<i>homo</i> = same)	
blood component therapy blŭd kom-pō'nent thār'ă-pē	transfusion of a specific blood component, such as packed red blood cells, platelets, or plasma	
cross-matching kros-match'ing	method of matching a donor's blood to the recipient by mixing a sample in a test tube to determine compatibility	
chemotherapy kem'ō-thār-ă-pē	treatment of malignancies, infections, and other diseases with chemical agents to destroy selected cells or to impair their ability to reproduce	
immunotherapy im'ū-nō-thār'ă-pē	use of biologic agents to prevent or treat disease by stimulating the body's own defense mechanisms, as seen in the treatment of AIDS, cancer, or allergy	
plasmapheresis plaz'mă-fĕ-rē'sis	removal of plasma from the body with separation and extraction of specific elements (e.g., platelets) followed by reinfusion (<i>apheresis</i> = a withdrawal)	

TERM	MEANING	
COMMON THERAPEUTIC DRUG CLASSIFICATIONS		
anticoagulant an' tē-kō-ag' yū-lant	a drug that prevents clotting of the blood	
hemostatic hē-mō-stat' ik	a drug that stops the flow of blood within the vessels	
vasoconstrictor vā'sō-kon-strik'tŏr	a drug that causes a narrowing of blood vessels, thereby decreasing blood flow	
vasodilator vā' sō-dī-lā' tŏr	a drug that causes dilation of blood vessels, thereby increasing blood flow	

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
	6.69 The general term for giving blood or blood products to a recipient whose blood is in some way deficient is blood
transfusion	There are several types of blood transfusions.
autologous	A patient's own blood removed for his or her own personal use in a later transfusion is called blood (<i>auto</i> = self). Blood from a compatible donor (i.e., a donor with the same blood type) is
homologous	called blood (homo = same).
component	6.70 The transfusion of specific blood components, such as platelets or plasma, is called blood therapy.
cross-matching	6.71 The process of determining compatibility between donated blood and the recipient's blood is called This must be done to ensure the recipient does not suffer a potentially fatal transfusion reaction.
chemotherapy	6.72 The treatment of neoplasms and other diseases with chemical agents that destroy the targeted cells is called Chemotherapy is used for many forms of cancer in virtually all body systems.
safe, immunotherapy	6.73 The term describing the use of biologic agents to prevent or treat disease by stimulating the body's own defense mechanisms was coined by combining <i>-therapy</i> with <i>immun/o</i> , the combining form meaning Therefore, the term is

ANSWERS	REVIEW
plasmapheresis	6.74 The root <i>apheresis</i> means withdrawal. The withdrawal of blood plasma from the body to separate out specific components before reinfusing the plasma is called
against anticoagulant	6.75 Recall that the prefix <i>anti-</i> means Drug classes are frequently named by their actions against something. A drug that prevents blood clotting or coagulation is an
vasoconstrictor vasodilator	6.76 Drug classes are also named for their specific actions. The combining form for blood vessel is <i>vas/o</i> . A drug that narrows or constricts blood vessels is a A drug that widens or dilates blood vessels is a
-stasis hem/o hemostatic	6.77 Recall that the suffix that means stop or stand is The combining form for blood is <i>hemat/o</i> or A type of drug that stops blood from flowing within a vessel is called a drug.

CHAPTER 6 ACRONYMS AND ABBREVIATIONS

EXPANSION
acquired immunodeficiency syndrome
alanine aminotransferase (enzyme)
aspartate aminotransferase (enzyme)
basic metabolic panel
blood urea nitrogen
complete blood count
comprehensive metabolic panel
carbon dioxide
computed tomography
erythrocyte sedimentation rate
hematocrit
hemoglobin
human immunodeficiency virus
mean corpuscular (cell) hemoglobin
mean corpuscular (cell) hemoglobin concentration
mean corpuscular (cell) volume
natural killer (cell)
positron-emission tomography

ABBREVIATION	EXPANSION
PLT	platelet count
PMN	polymorphonuclear (leukocyte)
PT	prothrombin time
PTT	partial thromboplastin time
RBC	red blood cell; red blood count
WBC	white blood cell; white blood count

CHAPTER 6 SUMMARY OF TERMS

The terms introduced in chapter 6 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acquired immunodeficiency syndrome (AIDS)/286

ă-kwīrd' im-yū-nō-dē-fish'en-sē sin'drōm

active immunity/282

ak' tiv i-myū' ni-tē

agranulocytes/278

ā-grăn'ū-lō-sītz

anemia/286

ă-nē' mē-ă

anisocytosis/284

an-ī'sō-sī-tō'sis

antibody/282

an' tē-bod-ē

anticoagulant/298

an' tē-kō-ag' yū-lant

antigen/282

an' ti-jen

aplastic anemia/286

ā-plas' tik ă-nē' mē-ă

autoimmune disease/286

aw-tō-i-myūn' di-zēz'

autologous blood/297

aw-tol'ŏ-gŭs blŭd

basic metabolic panel (BMP)/290

bā'sik met-ă-bol'ik păn'l

basophil/278

bā'sō-fil

blood chemistry/290

blŭd kem' is-trē

blood chemistry panels/290

blŭd kem' is-trē păn' lz

blood component therapy/297

blŭd kom-pō' nent thār'ă-pē

blood culture/290

blŭd kŭl'chŭr

blood indices/291

blŭd in'di-sēz

blood transfusion/297

blŭd trans-fyū'zhŭn

bone marrow aspiration/293

bōn mar'ō as-pi-rā'shŭn

bone marrow biopsy/293

bōn mar'ō bī'op-sē

bone marrow transplant/296

bōn mar'ō tranz'plant

CD4 cell count/290

c-d-for sel kownt

chemotherapy/297

kem'ō-thār-ă-pē

chyle/280

kīl

complete blood count (CBC)/290

kom-plēt blŭd kownt

comprehensive metabolic panel

(CMP)/290

kom-prē-hen'siv met-ă-bol'ik păn'l

computed tomography (CT)/293

kom-pyū' tĕd tō-mog' ră-fē

cross-matching/297

kros-match' ing

differential count/292

dif-ĕr-en'shăl kownt

eosinophil/278

ē-ō-sin'ō-fil

erythroblastosis fetalis/286

ĕ-rith'rō-blas-tō'sis fē-tă'lis

erythrocyte/277

ĕ-rith'rō-sīt

erythrocyte sedimentation rate (ESR)/290

ĕ-rith' rō-sīt sed' i-men-tā' shŭn rāt

erythropenia/284

ĕ-rith-rō-pē'nē-ă

granulocytes/277

gran'yū-lō-sītz

hematocrit (HCT or Hct)/291

hē' mă-tō-krit

hemochromatosis/287

hē' mō-krō-mă-tō' sis

hemoglobin (HGB or Hgb)/277, 291

hē-mō-glō' bin

hemolysis/284

hē-mol'i-sis

hemophilia/287

hē-mō-fil'ē-ă

hemostatic/298

hē-mō-stat'ik

homologous blood/297

hŏ-mol'ō-gŭs blŭd

immunity/280

i-myū'ni-tē

immunocompromised/284

im'yū-nō-kom'prō-mīzd

immunosuppression/284

im'yū-nō-sŭ-presh'ŭn

immunotherapy/297

im'ū-nō-thār'ă-pē

iron deficiency anemia/286

i'ĕrn de-fish' en-sē ă-nē' mē-ă

lacteals/280

lak' tē-ălz

leukemia/287

lū-kē' mē-ă

leukocyte/277

lū' kō-sīt

lymph/280

limf

lymph capillaries/280

limf kap' i-lār-ēz

lymph ducts/280

limf dūktz

lymph node dissection/296

limf nōd di-sek'shŭn

lymph nodes/280

limf nōdz

lymph vessels/280

limf ves'ĕlz

lymphadenectomy/296

lim-fad'ĕ-nek' tŏ-mē

lymphadenopathy/284

lim-fad'ĕ-nop'ă-thē

lymphadenotomy/296

lim-fad'ĕ-not'ŏ-mē

lymphangiogram/293

lim-fan' jē-ō-gram

lymphocyte/278

lim'fō-sīt

lymphocytopenia/284

lim' f ō-sī-tō-pē' nē-ă

lymphoma/287

lim-fō'mă

macrocytosis/283

mak'rō-sī-tō'sis

mean corpuscular (cell) hemoglobin

(MCH)/292

mēn kōr-pŭs'kyū-lăr (sel) hē-mō-glō'bin

mean corpuscular (cell) hemoglobin concentration (MCHC)/292

mēn kōr-pŭs' kyū-lăr (sel) hē-mō-glō' bin kon-

sen-trā'shŭn

mean corpuscular (cell) volume (MCV)/291

mēn kōr-pŭs' kyū-lăr (sel) vol' yūm

metastasis/287

mĕ-tas' tă-sis

microcytosis/283

mī'krō-sī-tō'sis

monocyte/278

mon'ō-sīt

mononucleosis/287

mon'ō-nū-klē-ō'sis

myelodysplasia/287

mī'ĕ-lō-dis-plā'zē-ă

neutropenia/284

nū-trō-pē'nē-ă

neutrophil/277

nū' trō-fil

pancytopenia/284

pan'sī-tō-pē'nē-ă

partial thromboplastin time (PTT)/290

par'shăl throm-bō-plas'tin tīm

passive immunity/282

pas'iv i-myū'ni-tē

pernicious anemia/286

për-nish'ŭs ă-nē' mē-ă

phlebotomy/289

fle-bot'ŏ-mē

plasma/277

plaz'mă

plasmapheresis/297

plaz'mă-fĕ-rē'sis

platelet count (PLT)/293

plāt' let kownt

platelets/278

plāt' letz

poikilocytosis/284

poy'ki-lō-sī-tō'sis

polycythemia/287

pol'ē-sī-thē'mē-ă

polymorphonuclear (PMN)

leukocyte/278

pol'ē-mōr-fō-nū'klē-ăr lū'kō-sīt

positron-emission tomography

(PET)/293

pŏz'i-tron ē-mish'ŭn tō-mog'ră-fē

prothrombin/290

prō-throm' bin

prothrombin time (PT)/290

prō-throm' bin tīm

red blood count (RBC)/291

rĕd blŭd kownt

red cell morphology/293

rĕd sel mōr-fol'ŏ-jē

reticulocytosis/284

re-tik'ū-lō-sī-tō'sis

Rh factor/287

r-h fak'tōr

Rh negative/287

r-h neg'ă-tiv

Rh positive/287

r-h poz'i-tiv

right lymphatic duct/280

rīt lim-fat'ik dŭkt

septicemia/287

sep-ti-sē'mē-ă

serum/277

sēr'ŭm

spleen/280

splēn

splenectomy/296

splē-nek' tŏ-mē

splenomegaly/284

splē-nō-meg'ă-lē

thoracic duct/280

thō-ras' ik dŭkt

thrombocytopenia/284

throm' bō-sī-tō-pē' nē-ă

thromboplastin/290

throm-bō-plas' tin

thymectomy/296

thī-mek' tŏ-mē

thymus/280

thī' mŭs

vasoconstrictor/298

vā' sō-kon-strik' tŏr

vasodilator/298

vā'sō-dī-lā'tŏr

venipuncture/289

ven'i-punk-chūr

white blood count (WBC)/290

wīt blŭd kownt



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

dyshematopoiesis

dys/hemato/poiesis

P CF S

DEFINITION: painful, difficult, or faulty/blood/formation

		22111		P dillinoity
1.	erythroblastosis			
	/		/	
	CF			
	DEFINITION:			
2	chylopoiesis			
۷,				
	/			
	CF	S		
	DEFINITION:			
3.	hemocytometer			
	/		/	
	CF			S
	DEFINITION:			
4	splenorrhagia			
т.	-			
	/			
	CF			
	DEFINITION:			
5.	lymphadenitis			
	/		/	
	R	R		S
	DEFINITION:			
6.	immunotoxic			
	/		/	
	CF			S
				_
	DEFINITION:			
7.	reticulocytosis			
	/		/	
	CF	R		S
	DEFINITION:			

17.	cytomorpho	Ci.				
	CF	CF				
18.	hemolysis	/				
		S				
	DEFINITION:					
19.	anemia					
		/				
	PEEDIZION	J				
20	metastasis					
20.		/				
	P					
	_					
Mar	ne the three (calculations tha	t are part of the blood indices:			
			t are part of the blood muices.			
			t medical terms and abbreviations:			
24.	4. The procedure of counting the number of leukocytes in the blood is called a and is abbreviated as					
	5. The blood study that determines the amount of pigment in red blood cells is called a and is abbreviated as or					
	6. The blood study that determines packed red blood cell volume is called a and is abbreviated as or					
27.	The classific	ation of white b	plood cells is performed in a	·		
Wri	te out the ex	panded term fo	or each abbreviation:			
28.	РТ					
29.	FOR					
30.	PTT					
31.	CD C					

62. polkulocytosis

64. lymphadenpathy

63. hemalysis

vvri	te the letter of the ma	atching definition in the	ie space after the te	erm:
32.	microcytosis _		a. large RBCs	
33.	poikilocytosis _		b. thrombocyte	
34.	neutrophil _		c. WBC with ros	se-stained granules
35.	monocyte _		d. RBC	
36.	eosinophil _		e. an agranulocy	te active in immunity
37.	lymphocyte _		f. WBC with dark-stained granules	
38.	basophil _		g. WBC termed	"one cell"
39.	platelet _		h. RBCs of uneq	ual size
40.	erythrocyte _		i. WBC with gra	nnules
41.	granulocyte _		j. large, irregula	r RBCs
42.	anisocytosis _		k. a polymorpho	onuclear WBC
43.	macrocytosis _		l. small RBCs	
Wri	te the correct medical	term for each of the f	ollowing definition	s:
44.		a decrease i	n the number of new	ıtrophils
45.		blood dona	ed by a person and	stored for his or her future use
46 impaired ability to provide an immune response			nmune response	
47.	test tube method of matching a donor's blood to the recipient			
48.	3 syndrome caused by HIV			
49.	9 removal of plasma from the body, extraction of specific elements, and then reinfusion			
50.	0 blood voluntarily donated by any person for transfusion			
				, r
	le the combining form			mlas/s
51. 52.	eat or swallow clot	phas/o thromb/o	phag/o	plas/o
			thym/o	lymph/o
53.	juice	lymph/o	hemat/o	chyl/o
54.	formation	plas/o hem/o	troph/o chrom/o	thromb/o
55.	color		hem/o	cyan/o
56.	blood	erythr/o		lymph/o
57.	safe	toxic/o	reticul/o	immun/o
58.	germ or bud	blast/o	gen/o	crin/o
	le the correct spelling			
	hematopoesis	hematopoies	is	hematoepoisis
	platelets	plattelets		plateletts
61.	anissocytosis	aniscocytosis		anisocytosis

poikilocytosis

lymphadenopathy

hemoliesis

poiekilocytosis

lymphoadenopathy

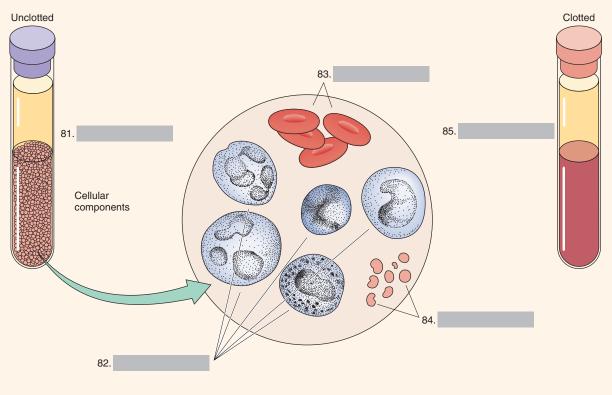
hemolysis

65.	myelodysplasia	mylodysplaszia	myelodysphazia
66.	thrombocytopnea	thrombocytopenia	throbocytpenia
67.	hematocrit	hemacrit	hematocrete
68.	splenecktomy	splenectomy	spleenectomy
69.	plasmapheresis	plazmaphoresis	plasmophoresis
70.	vasodialator	vasodilater	vasodilator

Give the noun used to form each adjective:

leukemic	
immunosuppressive	
plasmapheretic	
thymic	
hematopoietic	
splenic	
septicemic	
hemophilic	
myelodysplastic	
<i>v v</i> 1	
	leukemic immunosuppressive plasmapheretic thymic hematopoietic splenic septicemic hemophilic myelodysplastic thrombocytopenic

Write in the missing words on lines in the following illustrations of the components of blood:



81	84
82	85
83.	



MEDICAL RECORD ANALYSIS

Medical Record 6-1

PROGRESS NOTE

CC: Fatigue

- This 43 y/o female c/o feeling run down with lack of energy x 1 mo. Pt denies fever, chills, nausea, vomiting, diarrhea, constipation and reports no weight loss. She has had very heavy menstrual periods lasting 5 days since DC of birth control pills 1 year ago.
 - PMH: mononucleosis at age 14, NKDA. FH: father, age 68, died of MI; mother, age 74, has myelodysplasia; sister, age 45, L&W
 - SH: married x 8 yr, no children; ETOH–wine with dinner, denies smoking.
- VS: T 98.8°, P 81, R 15, BP 136/62. WDWN female in NAD. HEENT—WNL Neck: supple \$\bar{s}\$ lymphadenopathy. Lungs: clear. Heart: RRR \$\bar{s}\$ murmur Abdomen: soft and tender \$\bar{s}\$ organomegaly. Extremities: no edema.
- Etiology of fatigue and decreased energy unclear. Possible iron deficiency anemia in light of heavy menstrual periods.
- P: Blood studies to include comprehensive metabolic panel, CBC c̄ differential. RTO in 1 wk for lab results.

QUESTIONS ABOUT MEDICAL RECORD 6-1

- 1. Which of the following is not mentioned in the history?
 - a. type of treatment the patient received for mononucleosis
 - b. patient's consumption of alcohol
 - c. how long the patient has been married
 - d. health status of the patient's sister
- 2. Describe the condition of the patient's mother:
 - a. she has leukemia
 - b. she has a bleeding disorder characterized by an abnormally decreased number of platelets in the blood
 - c. she has a hereditary disorder characterized by an excessive buildup of iron deposits in the body
 - d. she has a disorder within the bone marrow characterized by a proliferation of abnormal stem cells, which usually develops into leukemia

- 3. Which of the following describes the findings of the physical examination?
 - a. swollen lymph glands
 - b. normal examination
 - c. fast heart rate
 - d. heart murmur
- 4. What is the possible cause of the patient's fatigue?
 - a. viral condition characterized by an increase in mononuclear cells (monocytes and lymphocytes) in the blood
 - b. macrocytic-normochromic type of anemia characterized by an inadequate supply of vitamin B₁₂, causing red blood cells to become large, varied in shape, and reduced in number
 - c. microcytic-hypochromic type of anemia characterized by small red blood cells containing low amounts of hemoglobin because of a lack of iron in the body
 - d. normocytic-normochromic type of anemia characterized by the failure of bone marrow to produce red blood cells

- 5. Identify the subjective information most significantly linked to the assessment:
 - a. enlarged lymph glands
 - b. heavy menstrual periods
 - c. fatigue
 - d. the patient quit taking birth control pills
- 6. Which of the following tests is part of the plan?
 - a. test to determine coagulation defects, such as platelet disorders
 - b. test to diagnose an infection in the bloodstream by culturing a specimen of blood
 - c. needle aspiration of bone marrow tissue for pathologic examination
 - d. expanded battery of automated blood chemistry tests used as a general screen for disease

Medical Record 6-2 A and B

FOR ADDITIONAL STUDY

Henry Lin went to his personal physician after an extended period of feeling weak and tired and starting to lose weight. His doctor then admitted him to Central Medical Center hospital for additional tests after conducting a physical examination and blood tests. He is now being treated as an outpatient by his internist, Dr. Bradley, and an oncologist, Dr. Ellison, to whom he was referred for consultation and concurrent care. Medical Record 6-2A is the oncology/hematology progress note dictated by Dr. Ellison, the oncologist treating Mr. Lin, at the time of a follow-up visit two weeks after Mr. Lin's hospitalization. The second document, Medical Record 6-2B, is a hematology lab report, submitted before a second follow-up with Dr. Ellison two weeks later.

Read Medical Record 6-2 (pages 312–313), then write your answers to the following questions in the spaces provided.

QI	UESTIONS ABOUT MEDICAL RECOR	RD 6-2						
1.	Below are medical terms used in the progress note that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below.							
	edema							
	scaphoid							
	anorexia	anorexia						
2.	. In your own words, not using medic	cal terminology, trar	nslate Mr. Lin's diagi	nosis:				
3.	3. Name the diagnostic test that confirmed this diagnosis:							
4.	. Write the medical term for Mr. Lin's enlarged spleen:							
5. Dr. Ellison's March 31 record includes the results of two CBC composition of the lier March 23 lab report as well as results from the same tests for March report also contains the CBC component tests. In the spaces below, we and their results at these three times. Do not use abbreviations. Be surmeasure.				. The April 15 lab he name of the tests				
	Test		Result					
		March 23	March 31	April 15				
6.	. What are the three elements Dr. Ell		Lin's treatment plan	 n?				
	a							
	b							
	С							

7. Study the April 15 laboratory report carefully, and complete the following table of selected test results. Write out the full name of the abbreviated measurement; circle N (normal) if the result for Mr. Lin is within the normal range or A (abnormal) if the result is outside the normal range.

		Test Name	Result	Range
a.	WBC		N	A
b.	RBC		N	A
c.	HGB		N	A
d.	HCT		N	A
e.	MCV		N	A
f.	MCH		N	A
g.	MCHC		N	A
h.	PLT		N	A
i.	lymph		N	A
j.	mono		N	A
k.	neutro		N	A
1.	eos		N	A
m.	baso		N	A

Medical Record 6-2A: For Additional Study

CENTRAL MEDICAL GROUP, INC.

Department of Oncology/Hematology

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PROGRESS NOTE

PATIENT: LIN, HENRY N.

DATE: March 31, 20xx

Mr. Lin is a 69-year-old man seen for myelodysplasia while hospitalized on March 17, 20xx. He was transfused with 4.0 U of packed cells during that hospitalization. A bone marrow biopsy revealed histology consistent with chronic myelomonocytic leukeumia (myelodysplasia).

A follow-up blood count was obtained through Dr. Bradley's office on March 23, 20xx, and revealed a hemoglobin of 11.0 G/DL and a hematocrit of 31.0%.

There have been no fevers, sweats, or anorexia; but he has noted some weight loss. There has been no bleeding. There has been no nausea, vomiting, or dark and bloody stools.

Exam: Weight: 172 lb. Blood Pressure: 120/50. Temperature: 98.6°F. Pulse: 88. Respirations: 18.

HEENT: Mild gum atrophy and inflammation. NECK: Supple. LYMPH NODES: There is no CARDIOVASCULAR: cervical or supraclavicular adenopathy. LUNGS: Clear. ABDOMEN: Scaphoid, soft, and nontender. The spleen is enlarged. EXTREMITIES: Without edema or petechiae.

TODAY'S LAB: Complete blood count reveals a total leukocyte count of 6600/cu mm, a hemoglobin of 8.0 G/DL, a hematocrit of 23.0%, and a platelet count of 149,000/cu mm.

CLINICAL DIAGNOSIS:

Chronic myelomonocytic leukemia (myelodysplastic syndrome). The patient is transfusion dependent.

The patient will be typed and crossmatched today and will be transfused with 2.0 U of packed red blood cells through the Oncology Day Facility tomorrow on April 1, 20xx

A. Ellison, M.D.

I have asked the patient to follow up with Dr. Bradley next week and with me in two weeks.

AE:gds

cc: Blair Bradley, M.D.

D: 3/31/20xxT: 4/3/20xx

Medical Record 6-2B: For Additional Study

CENTRAL MEDICA 211 Medical Center Drive		0000-1234 • PHONE	:: (012) 125-6784 • FAX:	(012) 125-9999	
04/15/20xx 14:27					
NAME : Lin, Henry MR# : TEST-226 ACCT# : 168946701	LOC: TEST	DOB: 2/2/xx	AGE: 69Y SEX: M		
M63558 COLL: 04/15/20x	x 13:23 REC:	04/15/20xx 13:25			
HEMOGRAM					
CBC WBC RBC HGB HCT MCV MCH MCHC PLT	4.1 2.93 9.1 25.3 86.2 31.1 36.0		[4.5 - 10.5] [4.6 - 6.2] [14.0 - 18.0] [42.0 - 52.0] [82 - 92] [27 - 31] [32 - 36] [150 - 450]	K/UL M/UL G/DL % FL PG G/DL K/UL	
Auto Lymph % Auto Mono % Auto Neutro % Auto Eos % Auto Baso % Auto Lymph # Auto Mono # Auto Neutro # Auto Eos # Auto Baso #	8.3 32.6 57.8 1.0 0.3 0.3 1.3 2.4 0.0		[20 - 40] [1 - 11] [50 - 75] [0 - 6] [0 - 2] [1.5 - 4.0] [0.2 - 0.9] [1.0 - 7.0] [0 - 0.7] [0 - 0.2]	% % % % K/UL K/UL K/UL K/UL	
TEST, PATIENT TES 04/15/20xx 14:27	ST-221	E	ND OF REPORT	INTERI	PAGE 1 M REPORT
INTERIM REPORT COM	MPLETE				

ANSWERS TO PRACTICE EXERCISES

- 1. erythro/blast/osis CF R S red/germ or bud/condition or increase
- 2. chylo/poiesis CF juice/formation
- 3. hemo/cyto/meter CF blood/cell/instrument for measuring
- 4. spleno/rrhagia spleen/to burst forth
- 5. lymph/aden/itis clear fluid/gland/inflammation
- 6. immuno/tox/ic safe/poison/pertaining
- 7. reticulo/cyt/osis CF R a net/cell/condition or increase
- 8. thymo/path/y CF R S thymus gland/disease/ condition or process of
- 9. leuko/cyt/ic CF R S white/cell/pertaining to
- 10. lymph/angio/gram CF clear fluid/vessel/record
- 11. spleno/megaly CF

spleen/enlargement

- 12. pro/myelo/cyt/e CF R S before/bone marrow/ cell/noun marker
- 13. leuko/cyto/penia CF white/cell/abnormal reduction

- 14. splen/ectomy spleen/excision (removal)
- 15. dia/lysis Р across or through/ breaking down or dissolution
- 16. lymph/oma clear fluid/tumor
- 17. cyto/morpho/logy CF cell/form/study of
- 18. hemo/lysis CF blood/breaking down or dissolution
- 19. an/emia without/blood condition
- 20. meta/stasis Р S beyond, after, or change/stop or stand
- 21. mean corpuscular (cell) volume (MCV)
- 22. mean corpuscular (cell) hemoglobin (MCH)
- 23. mean corpuscular (cell) hemoglobin concentration (MCHC)
- 24. white blood count, WBC
- 25. hemoglobin, HGB, Hgb
- 26. hematocrit, HCT, Hct
- 27. differential count
- 28. prothrombin time
- 29. erythrocyte sedimentation rate
- 30. partial thromboplastin time
- 31. complete blood count
- 32. 1
- 33. j
- 34. k

- 35. g
- 36. c
- 37. e 38. f
- 39. b
- 40. d
- 41. i
- 42. h
- 43. a
- 44. neutropenia
- 45. autologous blood
- 46. immunosuppression
- 47. cross-matching
- 48. acquired immunodeficiency syndrome (AIDS)
- 49. plasmapheresis
- 50. homologous blood
- 51. phag/o
- 52. thromb/o
- 53. chyl/o
- 54. plas/o
- 55. chrom/o
- 56. hem/o
- 57. immun/o
- 58. blast/o
- 59. hematopoiesis
- 60. platelets
- 61. anisocytosis
- 62. poikilocytosis
- 63. hemolysis
- 64. lymphadenopathy
- 65. myelodysplasia
- 66. thrombocytopenia
- 67. hematocrit
- 68. splenectomy
- 69. plasmapheresis
- 70. vasodilator
- 71. leukemia
- 72. immunosuppression
- 73. plasmapheresis
- 74. thymus
- 75. hematopoiesis
- 76. spleen
- 77. septicemia
- 78. hemophilia
- 79. myelodysplasia
- 80. thrombocytopenia

- 81. plasma
- 82. leukocytes or white blood cells
- 83. erythrocytes or red 85. serum blood cells
- 84. thrombocytes or platelets

ANSWERS TO MEDICAL RECORD ANALYSIS

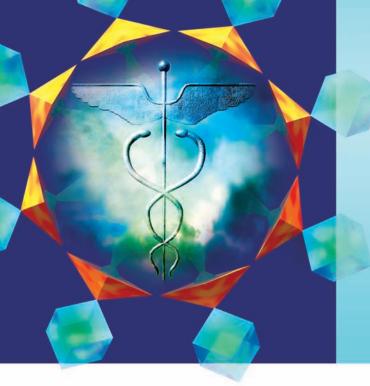
Medical Record 6-1: Progress Note

1. a 2. d 3. b 4. c 5. b 6. d

Medical Record 6-2: For Additional Study

See CD-ROM for answers.





CHAPTER

7

Respiratory System

✓ Chapter 7 Checklist	LOCATION
☐ Read Chapter 7: Respiratory System and complete all programmed review segments.	pages 317-349
☐ Review the starter set of flash cards and term components related to Chapter 7.	back of book
☐ Complete the Chapter 7 Practice Exercises and Medical Record Analysis 7-1.	pages 355-363
☐ Complete Medical Record Analysis 7-2 For Additional Study.	pages 364-368
☐ Complete the Chapter 7 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 7 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 7 terms.	CD-ROM

RESPIRATORY SYSTEM OVERVIEW

The respiratory system has two primary functions (Fig. 7-1):

- Brings oxygen into the body as air is inhaled into the lungs (inspiration) and passes the oxygen into the blood
- Rids the body of carbon dioxide through exhalation (expiration) as the lungs receive carbon dioxide diffused out of the blood

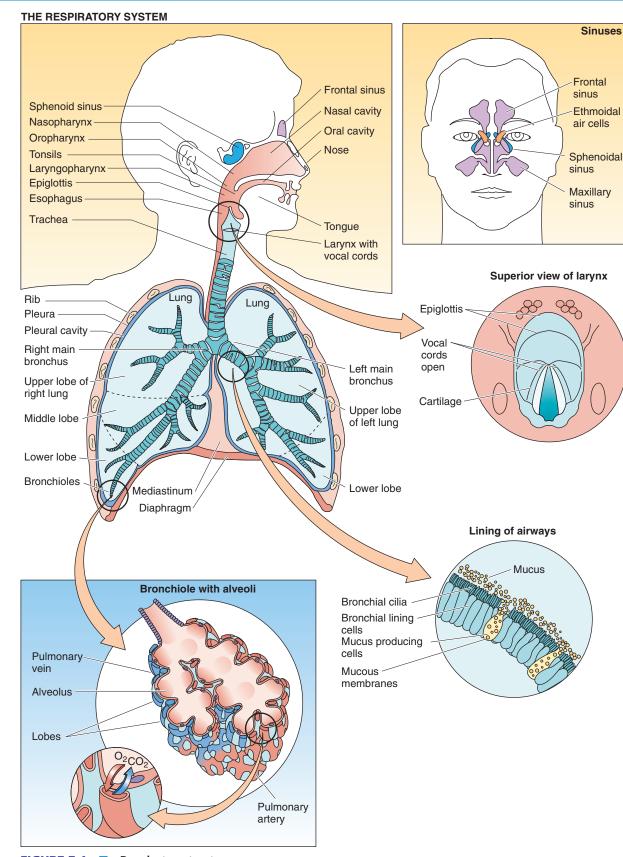


FIGURE 7-1 Respiratory tract.



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
alveol/o	alveolus (air sac)
bronch/o, bronchi/o	bronchus (airway)
bronchiol/o	bronchiole (little airway)
capn/o, carb/o	carbon dioxide
laryng/o	larynx (voice box)
lob/o	lobe (a portion)
nas/o, rhin/o	nose
or/o	mouth
ox/o	oxygen
palat/o	palate
pharyng/o	pharynx (throat)
phren/o	diaphragm (also mind)
pleur/o	pleura (lining of lungs)
pneum/o, pneumon/o	air or lung
pulmon/o	lung
sinus/o	sinus (cavity)
spir/o, -pnea (suffix)	breathing
thorac/o, pector/o, steth/o	chest
tonsill/o	tonsil
trache/o	trachea (windpipe)
uvul/o	uvula



Programmed Review: Combining Forms

ANSWERS	REVIEW
	7.1 The lungs are the primary organs of the respiratory
	system. A pulmonologist is a medical specialist who is
	concerned with the lungs. The combining form for lung is
pulmon/o	The two combining forms that can refer
pneum/o, pneumon/o	to either air or lung are and
	For example, pneumothorax describes air in the chest (pleural
inflammation	cavity). Pneumonitis is an of the lung.

ANSWERS	REVIEW
	7.2 The combining form for lobe (as in a lung lobe) is
lob/o	Because the suffix <i>-ectomy</i> means an
excision	or removal, the removal of a lung lobe is
lobectomy	called a
	7.3 Several different combining forms refer to the chest
	and are the basis of terms related to the respiratory system.
incision	A thoracotomy is an into the chest; the
thorac/o	term uses the combining form A stethoscope,
steth/o	from the combining form, is an instrument
	used to listen to lung sounds through the chest wall.
pain	Because the suffix -algia refers to, pectoralgia,
pector/o	from the combining form, means chest pain
ox/o	7.4 The combining form meaning oxygen is
deficient or below	Using the prefix <i>hypo-</i> , which means, and
condition of	the suffix -ia, which means, the term
hypoxia	for a condition of deficient oxygen levels is
	(Note that occasionally, when a prefix ends in a vowel and
	the root begins with a vowel, the final vowel is dropped from
blood	the prefix.) Because the suffix <i>-emia</i> refers to a
	condition, the term for a condition of deficient oxygen in
hypoxemia	the blood is
V 1	7.5 The lungs move oxygen into the blood and carbon
	dioxide out of the blood. The combining forms for carbon
aann (a. aanh (a	
capn/o, carb/o	dioxide are and
much	Hypercapnia, for example, is a condition of too
	carbon dioxide in the blood; hypercarbia is a synonym. The
to account to account.	term for a condition of too little carbon dioxide in the blood
hypocapnia, hypocarbia	is or
breathing	7.6 The combining form <i>spir/o</i> means
measuring	Because <i>-metry</i> refers to the process of
	something, the term for the measuring of breathing is
spirometry	A suffix related to breathing is
-pnea	, as in the term dyspnea, meaning
difficult, painful, or faulty	breathing.

ANSWERS	REVIEW
or/o nas/o rhin/o, inflammation	7.7 Many combining forms are the basis of anatomic terms related to the respiratory system. The combining form meaning mouth or oral cavity is The combining form meaning nose or nasal cavity is From the Greek word <i>rhis</i> comes a second combining term for nose: Rhinitis, for example, is an of the nose.
sinus/o -itis sinusitis	7.8 The combining form for sinus is Because the suffix meaning an inflammation is, the term for an inflammation of a sinus is (Remember that a combining vowel is not used before a suffix that begins with a vowel.)
palat/o palatoplasty	7.9 The palate is the roof of the mouth, from the combining form Recall that the suffix -plasty refers to a surgical repair or reconstruction; the term for reconstruction of the palate is
pharyng/o pharyngitis laryng/o laryngitis	7.10 The combining form for the pharynx (throat) is An inflamed pharynx is called Beneath the pharynx is the larynx (voice box), from the combining form An inflamed larynx is
tonsill/o uvul/o trache/o	 7.11 Many anatomic terms are virtually identical to their combining forms. The combining term for tonsil is The combining term for uvula is The combining term for trachea (windpipe) is These are all structures of the airway.
bronch/o bronchi bronchiol/o	 7.12 The combining form for bronchus (airway) is or bronchi/o. The plural of bronchus is A related term, bronchiole (little airway), is terms of the combining form
alveol/o	7.13 An alveolus is a small air sac in the lungs, from the combining form The common adjective form is alveolar.

ANSWERS	REVIEW
pleur/o	7.14 Pleura is a membrane enclosing the lungs, from the combining form The plural of pleura is
pleurae	
	7.15 The Greek word phren can mean either the mind or
	the diaphragm, a muscular partition below the lungs. The
phren/o	combining form for diaphragm is Using the
	common suffix for pain, the term for pain in the diaphragm
phrenalgia or phrenodynia	is



Self-Instruction: Anatomic Terms

Study the following:

TERM	MEANING
nose nōz	structure that warms, moistens, and filters air as it enters the respiratory tract; also houses the olfactory receptors for the sense of smell
sinuses sī'nŭs-ĕz	air-filled spaces in the skull that open into the nasal cavity
palate pal'ăt	roof of the mouth; partition between the oral and nasal cavities; divided into the hard and soft palate
hard palate hard pal'ăt	bony anterior (front) portion of the palate
soft palate soft pal'ăt	muscular posterior (back) portion of the palate
pharynx fă'ringks	throat; passageway for food to the esophagus and for air to the larynx
nasopharynx nā-zō-f ă' ringks	part of the pharynx directly behind the nasal passages
oropharynx ŏr'ō-fă-ringks	central portion of the pharynx between the roof of the mouth and the upper edge of the epiglottis
laryngopharynx lă-ring'gō-fă-ringks	lower part of the pharynx, just below the oropharyngeal opening into the larynx and esophagus
tonsils ton'silz	oval lymphatic tissues on each side of the pharynx that filter air to protect the body from bacterial invasion; also called palatine tonsils
adenoid ad'ĕ-noyd	lymphatic tissue on the back of the pharynx behind the nose; also called pharyngeal tonsil
uvula ū'vyū-lă	small projection hanging from the back middle edge of the soft palate; named for its grape-like shape



Programmed Review: Anatomic Terms

ANSWERS	REVIEW
sinuses palate soft	7.16 Air enters the respiratory system at the mouth and nose, which filters and warms the air. The air-filled cavities in the skull that open into the nasal cavity are called The roof of the mouth is called the, which is divided into two parts: the hard palate and the palate.
pharynx nasopharynx oropharynx	7.17 Air then passes through the throat, or The part of this structure located behind the nasal passages includes the combining form for nose in its name; it is called the The part of the pharynx between the roof of the mouth and the upper edge of the epiglottis includes the combining form for mouth in its name; it is called the
larynx laryngopharynx tonsils adenoid uvula	7.18 The air moves from the pharynx to the structure called the voice box, the medical term for which is Appropriately, the lower part of the pharynx, where it meets the larynx, is called the The oval lymphatic tissues on each side of the pharynx that help to filter bacteria from the air are the Another area of lymphatic tissue on the back of the pharynx behind the nose is the Hanging from the back middle edge of the soft palate is a small tissue projection called the
vocal cords epiglottis, upon	7.19 The glottis is the opening between the in the larynx. A related term for the lid-like structure that covers the larynx during swallowing to prevent food from entering the trachea is the The prefix <i>epi</i> - means The epiglottis lies upon the trachea to close it like a lid during swallowing.
trachea bronchi bronchial bronchioles, -ole	7.20 The air then enters the windpipe, or, which splits into the right and left, which are the two primary airways to the lungs. Note in Figure 7-1 how the bronchi soon split into more and more branches. The branching structure is called the tree. The smallest tubular branches are the The suffix means small.
alveoli	7.21 At the ends of the bronchioles are thin-walled, microscopic air sacs called, where oxygen and carbon dioxide are

ANSWERS	REVIEW
alveolus lungs lobes three	exchanged. The singular form of this term is The alveoli comprise much of the right and left The left lung is divided into two sections, called; the right lung has lobes.
pleura pleural	7.22 The membranes enclosing the lung and lining the thoracic cavity are called Between these two layers of pleura is a potential space called the cavity.
diaphragm	7.23 The lungs are in the thoracic cavity. Between the thoracic cavity and the abdominal cavity below is a muscular partition that moves up and down to help with breathing. This partition is called the
mediastinum	7.24 The term medial means relating to the middle. Using the same combining form, the term for the partition in the middle of the thorax that separates the thorax into two compartments is the
mucous membranes mucous cilia	7.25 Lining the inside of respiratory passages are membranes that secrete mucus, called Note the difference between the noun mucus and the adjective form Mucus traps microorganisms and other materials, and tiny hair-like processes, called, move this mucus up and out of the respiratory tract to be expelled from the body.
tissue	7.26 The term parenchyma refers to functional of any organ. In the lungs, the parenchyma includes the bronchioles and, most importantly, the, where gas exchange takes place.

Self-Instruction: Symptomatic Terms

Study the following:

TERM	MEANING
BREATHING (Fig. 7-2)	
eupnea yūp-nē'ă	normal breathing
bradypnea brad-ip-nē'ă	slow breathing

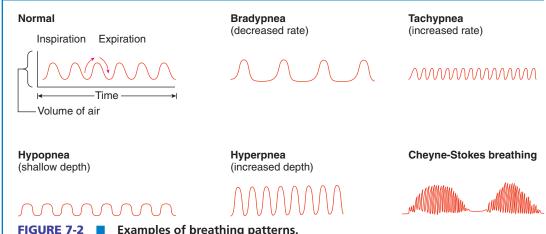


FIGURE 7-2 Examples of breathing patterns.	
TERM	MEANING
tachypnea tak-ip-nē'ă	fast breathing
hypopnea hī-pop' nē-ă	shallow breathing
hyperpnea hī-pĕr-nē'ă	deep breathing
dyspnea disp-nē'ă	difficulty breathing
apnea ap'nē-ă	inability to breathe
orthopnea ōr-thop-nē'ă	ability to breathe only in an upright position
Cheyne-Stokes respiration chān-stōks res-pi-rā'shŭn	pattern of breathing characterized by a gradual increase of depth and, sometimes, in rate to a maximum level, followed by a decrease, resulting in apnea
Lung Sounds	
crackles krak'ĕlz rales rahlz	popping sounds heard on auscultation of the lung when air enters diseased airways and alveoli; occurs in disorders such as bronchiectasis or atelectasis
wheezes wēz'ez rhonchi rong'kī	high-pitched, musical sounds heard on auscultation of the lung as air flows through a narrowed airway; occurs in disorders such as asthma or emphysema

GENERAL SYMPTOMATIC TERMS

caseous	necrosis
kā' zē-ŭs n	ĕ-krō'sis

stridor

strī'dōr

degeneration and death of tissue with a cheese-like appearance

in the upper airway (trachea or larynx)

high-pitched, crowing sound that occurs with an obstruction

TERM	MEANING
cyanosis sī-ă-nō' sis	bluish coloration of the skin caused by a deficient amount of oxygen in the blood
dysphonia dis-fō' nē-ă	hoarseness (phon/o = voice or sound)
epistaxis ep-i-stak'sis	nosebleed (<i>epi</i> = upon; <i>stazo</i> = to drip)
expectoration ek-spek-tō-rā'shŭn	coughing up and spitting out of material from the lungs
sputum spyū' tйт	material expelled from the lungs by coughing
hemoptysis hē-mop'ti-sis	coughing up and spitting out blood that originates in the lungs (<i>ptysis</i> = to spit)
hypercapnia hī-pĕr-kap'nē-ă hypercarbia hī-pĕr-kar'bē-ă	excessive level of carbon dioxide in the blood (<i>capno</i> = smoke; <i>carbo</i> = coal)
hyperventilation hī'pĕr-ven-ti-lā'shŭn	excessive movement of air into and out of the lungs, causing hypocapnia
hypocapnia hī-pō-kap'nē-ă hypocarbia hī-pō-kar'bē-ă	deficient level of carbon dioxide in the blood
hypoventilation <i>hī'pō-ven-ti-lā'sh</i> ŭn	deficient movement of air into and out of the lungs, causing hypercapnia
hypoxemia hī-pok-sē'mē-ă	deficient amount of oxygen in the blood
hypoxia hī-pok'sē-ă	deficient amount of oxygen in tissue cells
obstructive lung disorder (Fig. 7-3) ob-strŭk'tiv lŭng dis-ōr'dĕr	condition blocking the flow of air moving out of the lungs
restrictive lung disorder (see Fig. 7-3) rē-strik'tiv lŭng dis-ōr'dĕr	condition limiting the intake of air into the lungs
pulmonary edema pŭl'mō-nār-ē e-dē'mă	fluid filling the spaces around the alveoli and, eventually, flooding into the alveoli
pulmonary infiltrate (see Fig. 7-7) pūl'mō-nār-ē in-fil'trāt	density on an x-ray image representing the consolidation of matter within the air spaces of the lungs, usually resulting from an inflammatory process
rhinorrhea rī-nō-rē'ă	thin, watery discharge from the nose (runny nose)

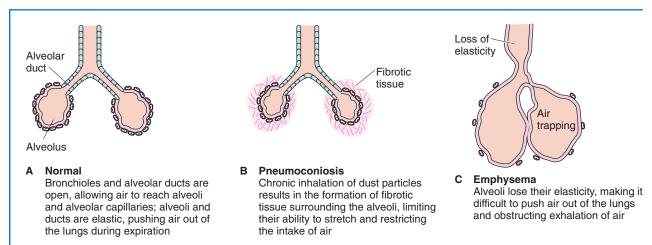


FIGURE 7-3 Comparison of normal alveoli (A) with alveoli in restrictive (B) and obstructive (C) lung disorders.

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
fast brady- tachypnea bradypnea	7.27 To review, the suffix <i>-pnea</i> refers to Many symptomatic terms use this suffix to identify different breathing problems. Recall that the prefix <i>tachy-</i> means, and that the prefix for slow is Therefore, fast breathing is called, and slow breathing is called
deficient hyper- hypopnea hyperpnea normal difficult eupnea dyspnea	 7.28 The prefix hypo- means below or, and the opposite prefix, meaning above or excessive, is The term for shallow (or deficient) breathing therefore is, and the term for deep (or excessive) breathing is 7.29 The prefix eu- means good or, and the prefix dys- means painful, faulty, or Therefore, the term for normal breathing is, and the term for difficulty breathing is
without apnea stopped upright Cheyne Stokes	 7.30 The prefix <i>a</i>- means The term for an inability to breathe is, and in an apneic patient, breathing has entirely. Orthopnea refers to an inability to breathe in any position but an one. 7.31 A pattern of breathing in which depth and, sometimes, rate gradually increase and then decrease is called

nose. It literally means "drip upon," combining the prefix for upon,



Self-Instruction: Diagnostic Terms

Study the following:

TERM	MEANING
asthma (Fig. 7-4) az'mă	panting; obstructive pulmonary disease caused by a spasm of the bronchial tubes or by swelling of the mucous membrane; characterized by paroxysmal (sudden, periodic) attacks of wheezing, dyspnea, and cough

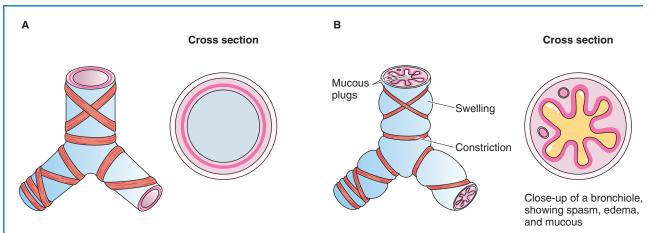
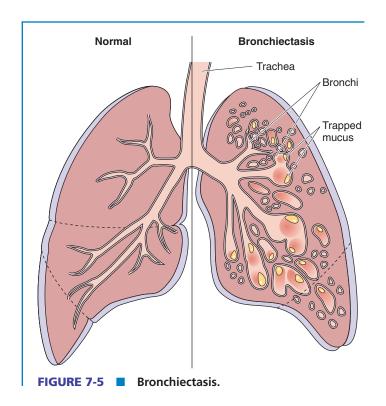
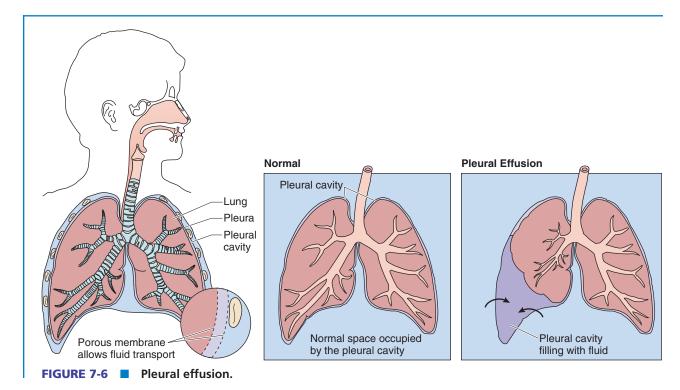


FIGURE 7-4 Comparison of normal bronchial tubes (A) with constricted bronchial tubes in asthma (B).

TERM	MEANING
atelectasis at-ĕ-lek'tă-sis	collapse of lung tissue (alveoli) (atele = imperfect; -ectasis = expansion or dilation)
bronchiectasis (Fig. 7-5) brong-kē-ek'tă-sis	abnormal dilation of the bronchi with accumulation of mucus
brong-kī'tis	inflammation of the bronchi
bronchogenic carcinoma brong-kō-jen'ik kar-si-nō' mă	lung cancer; cancer originating in the bronchi



TERM	MEANING
bronchospasm brong'kō-spazm	constriction of bronchi caused by spasm (involuntary contraction) of the peribronchial smooth muscle
emphysema (see Fig. 7-3, C) em-fi-sē'mă	obstructive pulmonary disease characterized by overexpansion of the alveoli with air and destructive changes in their walls, resulting in loss of lung elasticity and gas exchange (<i>emphysan</i> = to inflate)
chronic obstructive pulmonary disease (COPD) kron'ik ob-strŭk' tiv pūl'mō- nār-ē di-zēz'	permanent, destructive pulmonary disorder that is a combination of chronic bronchitis and emphysema
cystic fibrosis sis'tik fī-brō'sis	inherited condition of exocrine gland malfunction causing secretion of abnormally thick, viscous (sticky) mucus that obstructs passageways within the body, commonly affecting the lungs and digestive tract; mucus that obstructs the airways leads to infection, inflammation, and damage of lung tissue
laryngitis lar-in-jī'tis	inflammation of the larynx
laryngotracheobronchitis (LTB) lă-ring'gō-trā' kē-o-brong-kī'tis croup krūp	inflammation of the upper airways with swelling; creates a funnel-shaped elongation of tissue causing a distinct "seal bark" cough
laryngospasm lă-ring'gō-spazm	spasm of the laryngeal muscles, causing a constriction
nasal polyposis nā'zăl pol'i-pō'sis	presence of numerous polyps in the nose (a polyp is a tumor on a stalk)
pharyngitis fă-rin-jī'tis	inflammation of the pharynx
pleural effusion (Fig. 7-6) plūr'ăl e-fū'zhŭn	accumulation of fluid in the pleural cavity
empyema em-pī-ē'mă pyothorax pī-ō-thōr'aks	accumulation of pus in the pleural cavity
hemothorax hē-mō-thōr'aks	blood in the pleural cavity
pleuritis plū-rī'tis pleurisy plūr'i-sē	inflammation of the pleura
pneumoconiosis (Fig. 7-3, B) nū'mō-kō-nē-ō'sis	chronic restrictive pulmonary disease resulting from prolonged inhalation of fine dusts, such as coal, asbestos (asbestosis), or silicone (silicosis) (<i>conio</i> = dust)



TERM

pneumonia (Fig. 7-7) nū-mō' nē-ă

Pneumocystis pneumonia nū-mō-sis' tis nū-mō'nē-ă

pneumothorax (Fig. 7-8) nū-mō-thōr'aks

MEANING

inflammation in the lung resulting from infection by bacteria, viruses, fungi, or parasites or from aspiration of chemicals

pneumonia caused by the *Pneumocystis carinii* organism, a common opportunistic infection in those who are positive for the human immunodeficiency virus (HIV)

air in the pleural cavity caused by a puncture of the lung or chest wall

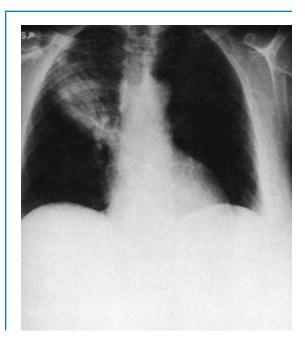
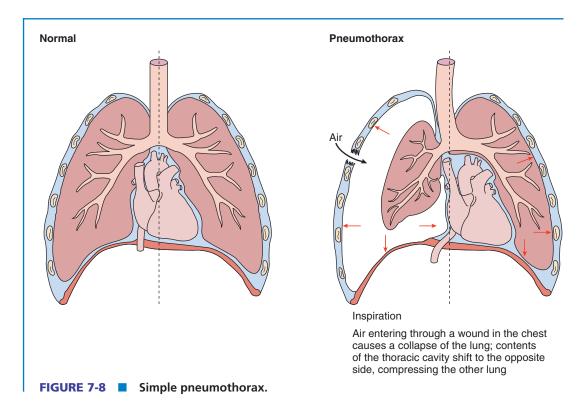


FIGURE 7-7 Chest x-ray image showing pulmonary infiltrates in right upper lobe consistent with lobar pneumonia. Dense material (inflammatory exudate) absorbs radiation, whereas normal alveoli do not.



TERM	MEANING
pneumohemothorax nū'mō-hē-mō-thōr'aks	air and blood in the pleural cavity
pneumonitis nū-mō-nī'tis	inflammation of the lung, often caused by hypersensitivity to chemicals or dusts
pulmonary embolism (PE) pul'mō-nār-ē em'bō-lizm	occlusion in the pulmonary circulation, most often caused by a blood clot
pulmonary tuberculosis (TB) pul'mō-nār-ē tū-bĕr-kyū-lō'sis	disease caused by the presence of <i>Mycobacterium tuberculosis</i> in the lungs; characterized by the formation of tubercles, inflammation, and necrotizing caseous lesions (caseous necrosis)
sinusitis sī-nŭ-sī'tis	inflammation of the sinuses
sleep apnea slep ap'nē-ă	periods of breathing cessation (10 seconds or more) that occur during sleep, often resulting in snoring
tonsillitis ton-si-lī'tis	acute or chronic inflammation of the tonsils
upper respiratory infection (URI) up'er rĕs-par'uh-tōr-ē in- fek'shŭn	infectious disease of the upper respiratory tract involving the nasal passages, pharynx, and bronchi



Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
upper respiratory infection	7.44 URI is the abbreviation for, an infection of the upper respiratory tract involving the nasal passages, pharynx, and bronchi.
-itis sinusitis tonsillitis pharyngitis laryngitis bronchitis	7.45 Recall that the suffix for inflammation is Many individual structures of the respiratory system can become inflamed, often by an infection. Inflammation of the sinuses is called Inflammation of the tonsils is called Inflammation of the pharynx is called Inflammation of the larynx is called Inflammation of the bronchi is called
pleuritis pleurisy	7.46 Inflammation of the pleura is called Another term for this condition is
pneumonitis laryngotracheobronchitis croup	7.47 The term for inflammation of the lung is built from the combining form meaning either air or lung. This term is Another "itis" inflammation involving the larynx, trachea, and bronchi causes a distinctive, seal-like bark. The longer term for this condition,, uses all three combining forms; the shorter term for this condition is
pneumonia Pneumocystis pneumoconiosis	7.48 Several other diagnostic terms are built from the combining form meaning air or lung. Using a suffix indicating a condition of, the term for an inflammation of the lung caused by infection with bacteria or viruses, or by exposure to chemicals, is A particular kind of pneumonia caused by the <i>Pneumocystis carinii</i> organism is called pneumonia. A chronic restrictive disease resulting from inhaling dust (<i>conio</i> = dust) is called
pneumothorax	7.49 This same combining form for air is used to build the terms referring to air in a body cavity. Air in the thorax caused by a puncture of the lung or chest wall is called The term for both air and blood

ANSWERS	REVIEW
pneumohemothorax	(hem/o = blood) in the thorax is The presence of blood alone in the pleural cavity of the chest
hemothorax	is called
bronchitis	7.50 In addition to inflammation of the bronchi, called, several other diagnostic conditions can occur in the bronchi. Recall that the suffix for an involuntary
-spasm	contraction is A constriction of the bronchi caused by contraction of the smooth muscle around the bronchi
bronchospasm	is called Recall that the diagnostic suffix
-ectasis	for expansion or dilation is; thus, the condition of
bronchiectasis, carcinoma	abnormal dilation of the bronchi with an accumulation of mucus is called Recall that
bronchogenic carcinoma	means cancer tumor. Lung cancer originating in the bronchi is called
-spasm laryngospasm	7.51 Again, the suffix for an involuntary contraction is A contraction of laryngeal muscles, causing a constriction, is termed
-ectasis atelectasis	7.52 Recall that the suffix for expansion or dilation is Therefore, the term for a collapse of lung tissue uses this suffix combined with the root <i>atele</i> (meaning imperfect):
asthma emphysema	7.53 There are several types of obstructive pulmonary disease. Caused by a spasm of the bronchial tubes or by swelling of their mucous membrane,
	The permanent destructive pulmonary disorder that is a combination of emphysema and chronic bronchitis is called
chronic obstructive pulmonary	
disease	(COPD).
condition	7.54 The diagnostic suffix <i>-osis</i> means or increase. The condition of numerous polyps in the nose is called
nasal polyposis	·

ANSWERS	REVIEW
cystic fibrosis	7.55 Another use for <i>-osis</i> is in the term describing the hereditary condition of exocrine gland malfunction that causes secretion of abnormally thick mucus in the lungs, obstructing the airways and leading to infection and damage to lung tissue:
hemothorax pyothorax pleural effusion	7.56 Fluid, pus, blood, or air can accumulate in the pleural cavity. The term for blood in this cavity in the thorax is The combining form meaning pus is py/o; thus, the accumulation of pus in the pleural cavity is called, or empyema. An accumulation of fluid in the pleural cavity is called a
apnea sleep apnea	7.57 Recall that the term for an inability to breathe is The condition in which this happens for short periods during sleep is called
pulmonary tuberculosis	7.58 The bacteria <i>Mycobacterium tuberculosis</i> causes the lung disease
pulmonary embolism	7.59 A blood clot that lodges in the pulmonary circulation, causing an occlusion, is called a



Self-Instruction: Diagnostic Tests and Procedures

Study the following:

TEST OR PROCEDURE	EXPLANATION
arterial blood gas (ABG) ar-tē'rē-ăl blŭd gas	analysis of arterial blood to determine the adequacy of lung function in the exchange of gases
рН	abbreviation for the potential of hydrogen; measurement of blood acidity or alkalinity
PaO ₂	abbreviation for partial pressure of oxygen; measurement of the amount of oxygen in the blood
PaCO ₂	abbreviation for partial pressure of carbon dioxide; measurement of the amount of carbon dioxide in the blood
endoscopy en-dos'kŏ-pē	examination inside a body cavity with a flexible endoscope for diagnostic or treatment purposes

TEST OR PROCEDURE	EXPLANATION
bronchoscopy (Fig. 7-9) brong-kos'kŏ-pē	use of a flexible endoscope, called a bronchoscope, to examine the airways
nasopharyngoscopy nā'zō-far-in-gos'kŏ-pē	use of a flexible endoscope to examine the nasal passages and the pharynx (throat) to diagnose structural abnormalities, such as obstructions, growths, and cancers
examination methods ek-zam-i-nā'shŭn meth'ŏdz	techniques used during physical examination to objectively evaluate the respiratory system
aws-kŭl-tā'shŭn	to listen; a physical examination method of listening to the sounds within the body with the aid of a stethoscope, such as auscultation of the chest for heart and lung sounds
percussion pĕr-kŭsh'ŭn	a physical examination method of tapping the body to elicit vibrations and sounds to estimate the size, border, or fluid content of a cavity, such as the chest
lung biopsy (Bx) lŭng bī'op-sē	removal of a small piece of lung tissue for pathologic examination
lung scan (Fig. 7-10) lŭng skan ventilation-perfusion (V/Q) scan ven-ti-lā'shŭn-per-fyū'zhŭn skan	a two-part nuclear (radionuclide) scan of the lungs to detect abnormalities of ventilation (respiration) or perfusion (blood flow) made 1) after radioactive material is injected in the patient's blood, and 2) as the patient breathes radioactive material into the airways; comparison of the two scans indicates whether an abnormality exists in the airways or the pulmonary circulation
magnetic resonance imaging (MRI) mag-net'ic rez'ō-nănts im'ă-jing	nonionizing image of the lung to visualize lung lesions
polysomnography (PSG) pol'ē-som-nog'rǎ-fē	recording of various aspects of sleep (i.e., eye and muscle movements, respiration, and brain-wave patterns) for diagnosis of sleep disorders (<i>somn/o</i> = sleep) (<i>see</i> Chapter 8, Figure 8-14)
pulmonary function testing (PFT) pŭl'mō-nār-ē fŭnk'shŭn test'ing	direct and indirect measurements of lung volumes and capacities
spirometry (Fig. 7-11) spī-rom'ĕ-trē	direct measurement of lung volume and capacity
tidal volume (TV or V _т) tī'dăl vol'yйт	amount of air exhaled after a normal inspiration
vital capacity (VC) vīt-ăl kă-pas'i-tē	amount of air exhaled after a maximal inspiration
peak flow (PF) pēk flō peak expiratory flow rate (PEFR) pēk ek-spī'ră-tō-rē flō rāt	measure of the fastest flow of exhaled air after a maximal inspiration

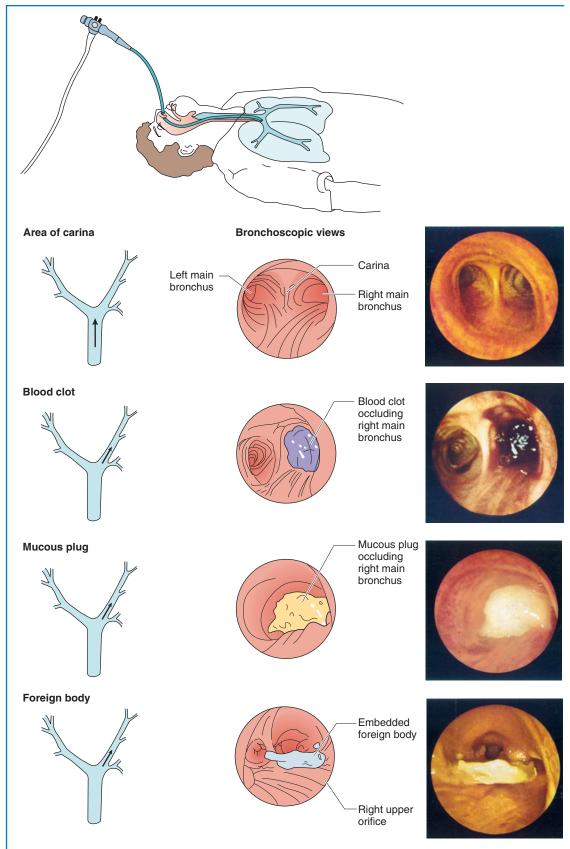


FIGURE 7-9 Bronchoscopy procedure.

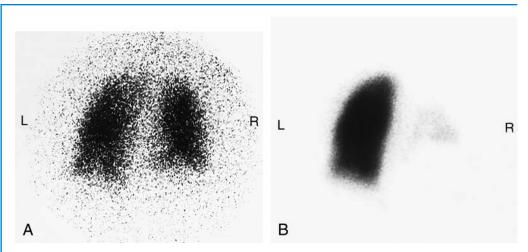


FIGURE 7-10 Posterior lung scan in a patient with an embolus in the right lung. A. Ventilation image shows a normal pattern. B. Absence of blood flow to the right lung is apparent on perfusion scan. L, left; R, right.

TEST OR PROCEDURE	EXPLANATION
pulse oximetry (Fig. 7-12) pŭls ok-sim'ǎ-trē	noninvasive method of estimating the percentage of oxygen saturation in the blood using an oximeter with a specialized probe attached to the skin at a site of arterial pulsation, commonly the finger; used to monitor hypoxemia
radiology rā-dē-ol'ŏ-jē	x-ray imaging
chest x-ray (CXR) chest x-rā	x-ray imaging of the chest to visualize the lungs; directional terms identify the path of the x-ray beam to produce the radiograph:
	PA (posterior-anterior) = from back to front
	AP (anterior-posterior) = from front to back
	lateral = toward the side (e.g., left lateral)

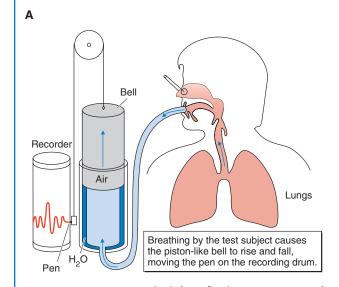




FIGURE 7-11 A. Principles of spirometry. B. Modern spirometry.



FIGURE 7-12 Pulse oximetry. A. Placement of a sensor on the patient's finger. B. Oxygen saturation reading on a portable monitor.

TEST OR PROCEDURE EXPLANATION CT of the thorax is used to detect lesions in the lung; CT computed tomography of the head is used to visualize the structures of the nose (CT) and sinuses kom-pyū' tĕd tō-mog' ră-fē pulmonary angiography x-ray imaging of the blood vessels of the lungs after the (Fig. 7-13) injection of contrast material pul'mō-nār-ē an-jē-og'ră-fē

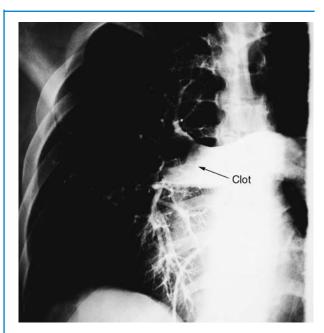


FIGURE 7-13 Pulmonary angiogram showing an embolus obstructing pulmonary circulation (arrow).

Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
-scopy endoscopy bronchoscopy nasopharyngoscopy	7.60 Recall that the suffix meaning a process of examination (with an instrument) is Because <i>endo-</i> is the prefix for within, the general term for examination within a body cavity using a scope is Use of a special endoscope to examine the airways and bronchi is called Examination of the nasal and throat passages is
chest	7.61 A stethoscope is used to listen to sounds. The physical examination procedure for doing this is called
percussion	7.62 Another physical examination method uses tapping of the body to listen to the resulting sounds and vibrations to make observations about underlying organs and masses. This is called
gases pH PaO ₂ PaCO ₂	7.63 Laboratory tests analyze arterial blood (ABGs) to determine the adequacy of their function in the lung. The is a measure of blood acidity or alkalinity. The amount of oxygen in the blood is measured as the partial pressure of oxygen and is referred to as The partial pressure of carbon dioxide is referred to as
biopsy	7.64 Removal of a small sample of lung tissue for pathologic examination is called lung Many different organs and tissues in the body can be biopsied.
many -graphy polysomnography	7.65 The combining form <i>somn/o</i> means sleep, and the prefix <i>poly</i> -means The suffix referring to the process of recording is Using these three word parts, the procedure that records many aspects of sleep (respiration, muscle movements, and so on) is called
pulmonary function	7.66 Measurement of lung volumes and capacities is called testing (PFT). Formed from the combining term for breathing and the suffix for the process of measuring, the term for the direct measurement of lung volume and
spirometry	capacity is The amount of air exhaled after a

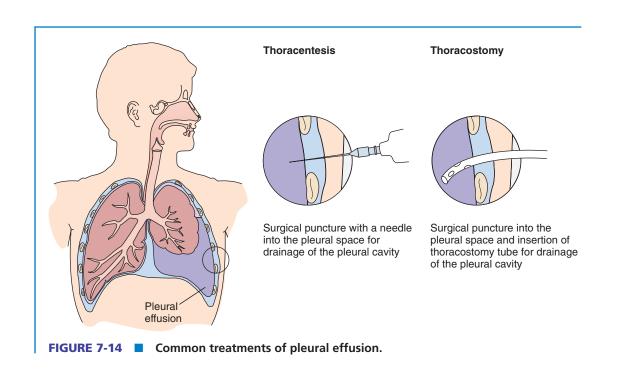
ANSWERS	REVIEW
tidal	normal inspiration is called volume. The amount of air
vital capacity	exhaled after a maximal inspiration is called
	The measure of the fastest flow of exhaled air after a maximal
peak expiratory	inspiration is called peak flow or
flow	rate.
	7.67 A noninvasive method of estimating the percentage of oxygen
	saturation in the blood uses an oximeter attached to the skin at a site
pulse oximetry	of arterial pulsation. This procedure is called
	7.68 Several different imaging modalities are used to visualize the
	lungs and other respiratory structures. A two-part nuclear scan of
	the lungs to detect perfusion or ventilation abnormalities is simply
lung scan	called a, or a V/Q scan, in which V stands for
ventilation, perfusion	(breathing) and Q stands for
	(blood flow). A nonionizing image of the lungs using magnetic
	fields and radiofrequency waves is produced using a modality called
magnetic resonance imaging	(MRI).
	7.69 Using <i>radi/o</i> , a combining form meaning x-ray, and the suffix
radiology	meaning study of, the term for x-ray imaging is A
record	radiogram is an x-ray; however, recall that the suffix
-graph	meaning instrument for recording,, is used in the
radiograph	preferred term for an x-ray image: An x-ray of
chest x-ray	the full thorax to visualize the lungs is a
posterior-anterior	(CXR). The abbreviations PA, for
anterior-posterior	and AP, for, indicate the path of
	the x-ray beam in producing the radiograph. Anterior refers to the
front, back	, and posterior refers to the AP, then, indicates
.:1.	that the x-ray passed from the front of the chest to the back of the
side	chest. A left lateral CXR is taken from the left of the chest.
angiography	X-ray imaging of the blood vessels of the lungs taken after injection of a contrast medium is called pulmonary The
angiography	form of x-ray imaging in which a computer creates cross-sectional
computed	images of structures such as the lungs is called
tomography	(CT).
comography	(01).



Self-Instruction: Operative Terms

Study the following:

TERM	MEANING
adenoidectomy ad'ĕ-noy-dek' tŏ-mē	excision of the adenoids
lō-bek' tŏ-mē	removal of a lobe of a lung
nasal polypectomy nā' zăl pol'ip-ek' tŏ-mē	removal of a nasal polyp
pneumonectomy nū'mō-nek'tŏ-mē	removal of an entire lung
thoracentesis (Fig. 7-14) thōr'ă-sen-tē'sis	puncture for aspiration of the chest (pleural cavity)
thoracoplasty thōr'ă-kō-plas-tē	repair of the chest involving fixation of the ribs
thoracoscopy thōr-ă-kos'kŏ-pē	endoscopic examination of the pleural cavity using a thoracoscope
thoracostomy (see Fig. 7-14) thōr-ă-kos' tŏ-mē	creation of an opening in the chest, usually to insert a tube
thoracotomy thōr-ă-kot'ŏ-mē	incision into the chest



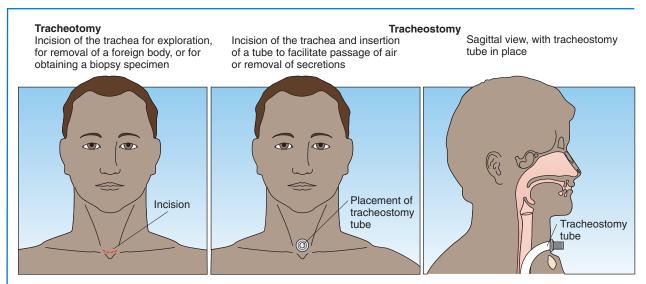


FIGURE 7-15 Operative procedures related to the trachea.

TERM	MEANING
tonsillectomy ton-si-lek'tŏ-mē	excision of the palatine tonsils
tonsillectomy and adenoidectomy (T&A) ton-si-lek'tŏ-mē and ad'ĕ-noy-dek'tŏ-mē	excision of the tonsils and adenoids
tracheostomy (Fig. 7-15) trā' kē-os' tŏ-mē	creation of an opening in the trachea, usually to insert a tube
tracheotomy (see Fig. 7-15) trā' kē-ot'ŏ-mē	incision into the trachea

Programmed Review: Operative Terms

ANSWERS	REVIEW
excision	7.70 Recall that the suffix <i>-ectomy</i> means or
	removal. The term for the surgical removal of the adenoids is
adenoidectomy	The term for removal of a nasal polyp is
nasal polypectomy	Formed using the combining
	form that means either air or lung, the term for removal of an entire
pneumonectomy	lung is The removal of the tonsils is called a
tonsillectomy	Sometimes, the tonsils and adenoids are removed
tonsillectomy and	at the same time in a procedure called a
adenoidectomy	(T&A). The removal of a lung lobe is called
lobectomy	a

ANSWERS	REVIEW
incision thoracotomy tracheotomy	7.71 The suffix <i>-tomy</i> refers to an An incision into the chest is called a An incision into the trachea is a
opening tracheostomy thoracostomy	7.72 The operative suffix <i>-stomy</i> means surgical creation of an The creation of an opening into the trachea, most often to insert a tube, is called a The surgical creation of an opening into the chest is called (Note that <i>-tomy</i> and <i>-stomy</i> have related but distinctly different meanings.)
-plasty thoracoplasty	7.73 The suffix denoting surgical repair or reconstruction is Thus, the surgical repair of the chest that involves fixing the ribs is called a
puncture thoracentesis	7.74 The suffix <i>-centesis</i> means a for aspiration. A puncture that is made surgically for aspiration of fluid or air from the chest (pleural cavity) is called a (Note that thoracocentesis is an acceptable term but is used less often than the shortened form: thoracentesis.)
examination thoracoscopy	7.75 Recall that the suffix -scopy means process of The endoscopic examination of the pleural cavity is called Thoracoscopy is a surgical procedure because an incision must be made for insertion of the endoscope. In contrast, bronchoscopy and nasopharyngoscopy are diagnostic procedures because the scope is inserted through natural body openings.



Self-Instruction: Therapeutic Terms

Study the following:

TERM	MEANING
cardiopulmonary resuscitation (CPR) kar' dē-ō-pul' mo-nār-ē rē-sŭs- i-tā' shŭn	method of artificial respiration and chest compressions to move oxygenated blood to vital body organs when breathing and the heart have stopped
continuous positive airway pressure (CPAP) therapy (Fig. 7-16) kon-tin' yū-ŭs poz' i-tiv ār' wā presh' ŭr thār' ă-pē	use of a device with a mask that pumps a constant pressurized flow of air through the nasal passages; commonly used during sleep to prevent airway closure in sleep apnea

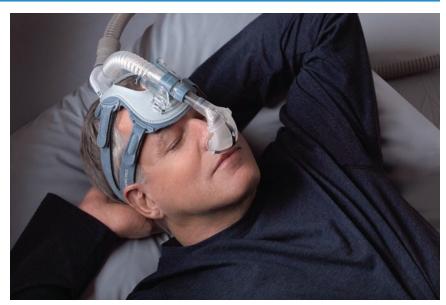


FIGURE 7-16 Patient wearing a continuous positive airway pressure (CPAP) mask. (Photo courtesy of Respironics, Inc., Murrysville, PA.)

TERM	MEANING
endotracheal intubation en' dō-trā' kē-ăl in-tū-bā' shŭn	passage of a tube into the trachea via the nose or mouth to open the airway for delivering gas mixtures to the lungs (e.g., oxygen, anesthetics, or air)
incentive spirometry (Fig. 7-17) in-sen'tiv spī-rom'ĕ-trē	a common postoperative breathing therapy using a specially designed spirometer to encourage the patient to inhale and hold an inspiratory volume to exercise the lungs and prevent pulmonary complications
mechanical ventilation (Fig. 7-18) mĕ-kan' i-kăl ven-ti-lā' shŭn	mechanical breathing using a ventilator

COMMON THERAPEUTIC DRUG CLASSIFICATIONS

antibiotic an' tē-bī-ot' ik	a drug that kills or inhibits the growth of microorganisms
anticoagulant an' tē-kō-ag' yū-lant	a drug that dissolves, or prevents the formation of, thrombi or emboli in the blood vessels (e.g., heparin)
antihistamine an-tē-his' tă-mēn	a drug that neutralizes or inhibits the effects of histamine
histamine his' tă-mēn	a compound in the body that is released by injured cells during allergic reactions, inflammation, and so on, causing constriction of bronchial smooth muscle and dilation of blood vessels



FIGURE 7-17 Incentive spirometer.



FIGURE 7-18 Mechanical ventilation.

TERM	MEANING
bronchodilator brong-kō-dī-lā' ter	a drug that dilates the muscular walls of the bronchi
expectorant ek-spek' tō-rănt	a drug that breaks up mucus and promotes coughing

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
cardiopulmonary	7.76 CPR stands for
resuscitation	, a method of artificial respiration and
	chest compressions to move oxygenated blood to vital body
	organs when breathing and the heart have stopped.
	7.77 A patient with sleep apnea may use a device that pumps
	pressurized air through the nasal passages to prevent airway
continuous	closure during sleep. This treatment is called
positive airway	pressure (CPAP) therapy. Recall
stopped	that apnea means breathing.
within	7.78 The prefix <i>endo-</i> means The passage of a
	tube within the trachea via the nose or mouth to deliver oxygen
endotracheal intubation	to the lungs is called

ANSWERS	REVIEW
measurement	7.79 Recall that spirometry is the direct of lung volume and capacity. A similar spirometer is used in postoperative breathing therapy to motivate the patient to inhale and hold a larger inspiratory volume. This therapy is called
incentive spirometry	
mechanical ventilation	7.80 Mechanical breathing using a ventilator machine is called
against anticoagulant antibiotic	7.81 Recall that the prefix <i>anti-</i> means or opposed to. Drug classes are commonly named for their actions, such as acting against some thing or process. A drug that acts to prevent the process of coagulation (forming of blood clots) is called an The same prefix joined with the combining form for life (<i>bio</i>) denotes a drug class that acts to kill or inhibit bacterial life. This drug is called an
histamine antihistamine	7.82 A substance in the body that is released in allergic reactions, and that causes constriction of bronchial muscles, is called a A drug that acts to inhibit the effects of histamine is called an
bronchodilator	7.83 A person who has asthma may experience constriction of the bronchi during an attack. A therapeutic drug that counteracts this constriction by dilating the muscular walls of the bronchi is called a
coughing expectorant	7.84 Recall that expectoration means up and spitting out material from the lungs. A type of drug that breaks up mucus to promote coughing is called an

CHAPTER 7 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
ABG	arterial blood gas
AP	anterior-posterior
Bx	biopsy
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure

ABBREVIATION	EXPANSION
CPR	cardiopulmonary resuscitation
СТ	computed tomography
CXR	chest x-ray
HIV	human immunodeficiency virus
LTB	laryngotracheobronchitis
MRI	magnetic resonance imaging
PA	posterior-anterior
PaCO ₂	partial pressure of carbon dioxide
PaO ₂	partial pressure of oxygen
PE	pulmonary embolism
PEFR	peak expiratory flow rate
PF	peak flow
PFT	pulmonary function testing
pH	potential of hydrogen
PSG	polysomnography
T&A	tonsillectomy and adenoidectomy
TB	tuberculosis
TV or V_{T}	tidal volume
URI	upper respiratory infection
VC	vital capacity
V/Q	ventilation-perfusion (scan)

CHAPTER 7 SUMMARY OF TERMS

The terms introduced in chapter 7 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

adenoid/322	antihistamine/347
ad'ĕ-noyd	an-tē-his' tă-mēn
adenoidectomy/344	apnea/326
ad'ĕ-noy-dek' tŏ-mē	ap'nē-ă
alveoli/323	arterial blood gas (ABG)/337
al-vē'ō-lī	ar-tē' rē-ăl blŭd gas
antibiotic/347	asthma/330
an' tē-bī-ot' ik	az'mă
anticoagulant/347	atelectasis/331
an' tē-kō-ag' yū-lant	at-ĕ-lek' tă-sis

auscultation/338 aws-kŭl-tā'shŭn

bradypnea/325 brad-ip-nē'ă

bronchial tree/323

brong' kē-ăl trē

bronchiectasis/331 *brong-kē-ek'tă-sis*

bronchioles/323

brong' kē-ōlz

bronchitis/331 *brong-kī'tis*

bronchodilator/348 *brong-kō-dī-lā' ter*

bronchogenic carcinoma/331 brong-kō-jen' ik kar-si-nō' mă

bronchoscopy/338 *brong-kos' kŏ-pē*

bronchospasm/332 *brong' kō-spazm*

cardiopulmonary resuscitation (CPR)/346

kar' dē-ō-pul' mo-nār-ē rē-sŭs-i-tā' shŭn

caseous necrosis/326 kā' zē-ŭs nĕ-krō' sis

chest x-ray (CXR)/340

chest x-rā

Cheyne-Stokes respiration/326

chān-stōks res-pi-rā'shŭn

chronic obstructive pulmonary disease (COPD)/332

kron'ik ob-strŭk'tiv pūl'mō-nār-ē di-zēz'

cilia/323 sil'ē-ă

computed tomography (CT)/341

kom-pyū' tĕd tō-mog' ră-fē

continuous positive airway pressure (CPAP) therapy/346

kon-tin' yū-ŭs poz' i-tiv ār' wā presh'ŭr thār' ă-pē

crackles/326

krak'ĕlz

croup/332

krūp

cyanosis/327 sī-ă-nō'sis

cystic fibrosis/332 *sis' tik fī-brō' sis*

diaphragm/323

dī'ă-fram

dysphonia/327 dis-fō' nē-ă

dyspnea/326 disp-nē'ă

emphysema/332 em-fi-sē'mă

empyema/332 em-pī-ē' mă

endoscopy/337 en-dos' kŏ-pē

endotracheal intubation/347 en' dō-trā' kē-ăl in-tū-bā'shŭn

epiglottis/323 ep-i-glot'is epistaxis/327 ep-i-stak'sis

eupnea/325 yūp-nē'ă

examination methods/338 ek-zam-i-nā'shŭn meth'ŏdz

expectorant/348 ek-spek' tō-rănt

expectoration/327 ek-spek-tō-rā'shйn

glottis/323 *glot'is*

hard palate/322 hard pal'ăt

hemoptysis/327 *hē-mop'ti-sis*

hemothorax/332 hē-mō-thōr'aks histamine/347 his'tă-mēn hypercapnia/327 hī-pēr-kap'nē-ă

hypercarbia/327 hī-pĕr-kar'bē-ă

hyperpnea/326 hī-pĕr-nē'ă

hyperventilation/327 hī'pĕr-ven-ti-lā'shŭn

hypocapnia/327 hī-pō-kap'nē-ă

hypocarbia/327 hī-pō-kar' bē-ă hypopnea/326

hī-pop'nē-ă

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wēz'ez



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

intranasal

intra / nas / al

P R S

DEFINITION: within/nose/pertaining to

			BEI II VII I IOI V.	within nose, per tani
1.	pulmonolog	у		
		-		
	CF			
2				
۷.	thoracocente			
	CF			
3.	nasosinusitis	3		
		/	/	_
		R		
	DEFINITION:			
4.	hypoxemia			
		/	/	
	P			
_		-		
٥.	pleuritis	,		
		S		
	DEFINITION:			
6.	hypercarbia			
		/	/	_
	P		S	
7.	alveolar			
		/		
	R			
		5		
	DEFINITION:			

356 MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE

17.	lobectomy								
	R DEFINITION: _	S							
18.	peripleural/								
	P DEFINITION: _	R		S					
19.	stethoscope/								
	CF DEFINITION: _	S							
20.	pneumonic/								
		S							
21.	nasopharyngo		/						
	CF DEFINITION: _	CF		S					
22.	bronchiolecta								
		S							
	phrenoptosis/								
	CF DEFINITION: _	S						 	
24.	pectoral/								
	R DEFINITION: _	S							
25.	uvulopalatopl		-		/				
	CF DEFINITION: _	CF		CF		S			

Write the correct medical term for each of the following definitions:

26.		_ air in pleural space
27.		_ pus in pleural space
28.		_ blood in pleural space
29.		_ listening to sounds within the body
30.		_ endoscope used to examine the airways
31.		coughing up and spitting out material from the lungs
32.		_ inflammation of the pleura
33.		to elicit sounds or vibrations by tapping
34.		_ deficient movement of air into and out of the lungs
35.		puncture for aspiration of the chest
36.		_ type of technology used in a lung scan
37.		_ hoarseness
38.		_ inflammation of the voice box
39.		_ deficient amount of oxygen in tissue cells
40.		_ disease characterized by overexpansion of the alveoli with air
41.		_ nosebleed
42.		cancer originating in the bronchus
43.		inherited condition causing secretion of thick mucus that obstructs the airways and leads to infection and damage of lung tissue
44.		a collapse of lung tissue
45.		_ material expelled from the lungs by coughing
46.		a high-pitched crowing sound that is a sign of upper airway obstruction
47.		_ blood clot in the lungs
48.		surgical creation of an opening in the trachea
49.		disease characterized by paroxysmal wheezing, dyspnea, and cough
50.		_ excessive movement of air into and out of the lungs
51.		common lung infection seen in those positive for HIV
52.		term for a combination of emphysema and chronic bronchitis
Com	plete each medical term by wr	iting the missing word part or parts:
53.	coni	= lung condition caused by prolonged inhalation of dust
	bronchi = dilatio	
	plasty = surgical	
56.	itis = inflammatio	on of the lung

57.	n	netry = process of measuring breathing
58.	p	nea = normal breathing
59.	p	nea = slow breathing
60.	p	nea = difficulty breathing
61.	p	nea = inability to breathe except in an upright position
62.	p	nea = inability to breathe
63.	p	nea = fast breathing
V rit	e out the expa	nded term or meaning for each abbreviation:
	DEED	
65.	V.C	
66.	ТЪ	
67.	CDD	
68.	CORD	
69.	D.CO	
70.	LIDI	
71.	17	
72.	DET	
73.	DCC	
74.	CPAP	
∧/rit	e the standard	abbreviations for the following descriptions:
		chest x-ray
		analysis of the blood to determine the adequacy of lung func-
70.		tion in the exchange of gases
77.		surgical removal of the tonsils and adenoids
V rit	e the letter of	the matching term or term component in the space provided:
78.	crackles	a. naso
79.	wheezes	b. hyperventilation
80.	pleurisy	c. hypercarbia
81.	pneumoconic	osis d. thoraco
82.	empyema	e. rales
83.	hemothorax	f. asbestosis
84.	stetho	g. pleuritis
85.	hypercapnia	h. rhonchi
86.	hyperpnea	i. pyothorax
87.	rhino	j. thoracentesis

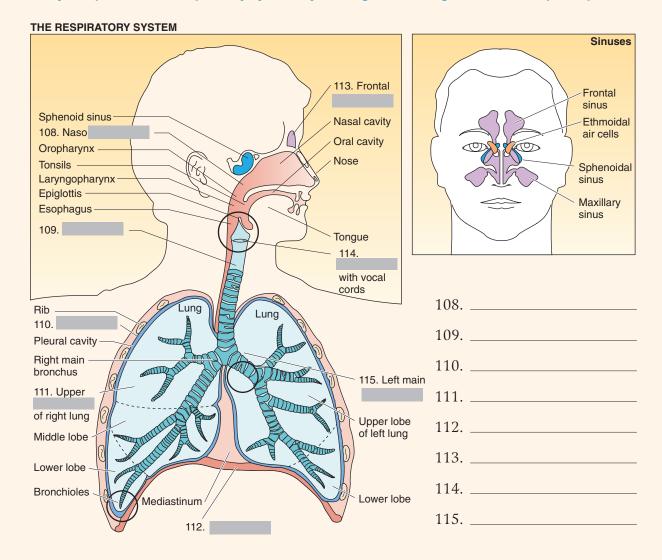
Circle the correct spelling in each set of words:

88. auskucation	auscultation	ascultation
89. tackypnea	tachypenia	tachypnea
90. eupnea	eupenia	eupneia
91. plurisy	plurisey	pleurisy
92. hemathorex	hemothorax	hematothorex
93. stethoscope	stethescope	stethascope
94. epitaxes	epistaksis	epistaxis
95. ronchi	rhonchi	rhonkhi
96. hemoptysis	hemaptysis	hemoptsis
97. rhinorhea	rhinorrhea	rinorhea
98. imphasema	emphysema	emphasema
99. atelectasis	atalexisis	attelexis

Give the noun that is used to form each adjective:

100. orthopneic	
101. asthmatic	
102. hypoxic	
103. dyspneic	
104. pharyngeal	
105. apneic	
106. tracheal	
107 pleuritic	

Identify the parts of the respiratory system by writing the missing words in the spaces provided:



Circle the combining form that corresponds to the meaning given:

116. nose	ren/o	rhin/o	nos/o
117. air or lung	aden/o	pneum/o	thorac/o
118. throat	thorac/o	laryng/o	pharyng/o
119. chest	thorac/o	pneum/o	lapar/o
120. voice box	laryng/o	trache/o	pharyng/o
121. breathing	aer/o	spir/o	crin/o
122. diaphragm	phren/o	pleur/o	pneumon/o
123. mouth	ox/o	or/o	spir/o



MEDICAL RECORD ANALYSIS

Medical Record 7-1

PROGRESS NOTE

- S: This is a 26 y.o. ? c/o a nonproductive cough, dyspnea, and fever \times 2 d; pt does not smoke and has otherwise been in good health.
- O: T 101°F, BP 100/64, R 25, P 104

Tachypnea is accompanied by mild cyanosis, and inspiratory crackles are noted upon auscultation. WBC 31,000, Hct 37%, platelet count 109,000. CXR shows diffuse infiltrates at the bases of both lungs. An ABG taken while the patient was breathing room air showed a pH of 7.54, PaCo₂ of 20, PaO₂ of 74. Sputum specimen contains 3+ WBC but no bacteria.

- A: Pneumonia of unknown etiology
- P: IV erythromycin STAT admit to ICU deliver O₂ by face mask and monitor for hypoxemia

QUESTIONS ABOUT MEDICAL RECORD 7-1

- 1. What is the patient's chief complaint?
 - a. afebrile with a dry cough and difficulty breathing
 - b. febrile with a dry cough and difficulty breathing
 - c. cannot breathe, has a fever, and is coughing up material from the lungs
 - d. hoarse throat, dry cough, and fever
 - e. febrile, coughing up sputum, and breathing fast
- 2. What are the findings upon PE?
 - a. slow breathing, blue skin, and rhonchi heard in the lungs as the patient exhales
 - b. fast breathing, blue skin, and musical sounds heard in the lungs as the patient inhales
 - c. slow breathing, blue skin, and rales heard in the lungs as the patient holds her breath
 - d. fast heart, blue skin, and rales heard in the lungs as the patient inhales
 - e. fast breathing, blue skin, and popping sounds heard in the lungs as the patient inhales
- 3. What did the chest x-ray show?
 - a. tuberculosis
 - b. asthma

- c. density representing solid material usually indicating inflammation
- d. fluid filling spaces around the lungs
- e. lung cancer
- 4. What is the impression?
 - a. dilation of the bronchi with an accumulation of mucus
 - b. inflammation of the bronchi
 - c. inflammation of the pleura
 - d. inflammation of the lungs because of sensitivity to dust or chemicals
 - e. inflammation of the lungs of unknown cause
- 5. What is an ABG?
 - a. analysis of blood to determine the adequacy of lung function in the exchange of gases
 - b. measurement of lung volume and capac-
 - c. measurement of the flow of air during inspiration
 - d. scan to detect breathing abnormalities
 - e. image of the lungs used to visualize lung lesions

- 6. Describe the condition for which the patient was monitored while undergoing oxygen therapy:

 - a. blockage of airflow out of the lungsb. excessive movement of air into and out of the lungs
 - c. deficient amount of oxygen in the blood
 - d. deficient amount of oxygen in the tissue
 - e. excessive level of carbon dioxide in the blood

- 7. What is the Sig: on the erythromycin?
 - a. not mentioned
 - b. inject into a vein immediately
 - c. take four immediately
 - d. insert into the vagina immediately
 - e. inject into a muscle immediately

Medical Record 7-2

FOR ADDITIONAL STUDY

Angelica Torrance, a retired painter who for years has boasted to friends that she has the good health of a 30-year-old, suffered a broken ankle when she slipped off a footstool in her basement. The surgical repair of her fracture at Central Medical Center was routine. Soon after surgery, however, Ms. Torrance developed other problems, and a pulmonologist was eventually called in for a consultation. Medical Record 7-2 is the history and physical examination report from Dr. Carl Brownley, the pulmonologist who consulted with Ms. Torrance's doctors after she developed breathing problems.

Read Medical Record 7-2 (pages 366-368), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 7-2

ζU,	ESTIONS ADOUT MILDICAL RECORD 7-2
1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below.
	morphine
	heparin
	obese
2.	In your own words, not using medical terminology, describe what surgery Ms. Torrance had for her broken ankle:
3.	Describe in your own words the four symptoms that Ms. Torrance developed postsurgically:
	a
	b
	c
	d
4.	Before Ms. Torrance's acute "sense of suffocating," she was being treated with what three pharmacologic treatments?
	a
	b
	c
5.	Immediately after her reported "sense of suffocating," Ms. Torrance was given what two treatments?
	a
	b

Medical Record 7-2: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

HISTORY

DATE OF CONSULTATION:

October 24, 20xx

HISTORY:

The patient is a 75-year-old woman who is admitted to this hospital on October 18, 20xx, after having fractured her right ankle. She underwent an ORIF of this lesion. Upon emerging from surgery, it was noted that she was quite wheezy and was having copious, purulent secretions. She was started on antibiotics; however, fever, cough, and breathlessness persisted. Finally, she was evaluated on October 20, 20xx, for possible pulmonary complications. A V/Q scan at that time showed a high probability for pulmonary emboli, and she was started on IV Heparin along with her antibiotics and bronchodilators. The patient did well with resolution of symptoms and fever and was progressing to the point of discharge.

Late vesterday evening, however, the patient developed the acute onset of "a sense of suffocating." This lasted for about 20-30 minutes and did resolve somewhat with the application of nasal oxygen and morphine sulfate 2 mg. The patient denies any cough, mucus, or actual chest pressure or pain. She denies any wheezing during this episode. Her heart rate went as high as 115-120; however, she was normotensive.

She was transported to ICU for further evaluation and management. An ECG obtained at that time revealed slight ST segment depression and T wave flattening at V4-6 with sinus tachycardia. Arterial blood gases done during the episode on 7 L O₂ showed a PaO₂ of 78, a pH of 7.44, and a PaCO₂ of 35. This morning, a chest x-ray revealed continuing resolution of the right upper and right lower lobe infiltrates. A V/Q scan showed evidence of resolving multiple perfusion defects on the right that appeared to actually match the defects noted on the chest x-ray. PTT, which had been continually in control during her Heparin therapy, was as high as 150 on 7 units of Heparin per hour.

PAST MEDICAL HISTORY:

The patient denies a past history of chronic respiratory disease but did have severe pneumonia about 30 years ago. The patient is a nonsmoker who has never smoked, and she has an essentially negative past medical history.

ALLERGIES:

The patient denies any personal allergies, but her family all suffer from chronic post nasal drip.

(continued)

PULMONARY CONSULTATION Page 1

PT. NAME: ID NO:

TORRANCE, ANGELICA W.

ROOM NO:

ATT. PHYS.

C. BROWNLEY, M.D.

IP-228904

663

Medical Record 7-2: For Additional Study (Continued)

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

PHYSICAL EXAMINATION

GENERAL:

Well-nourished, somewhat overweight woman in no acute distress, having recently come back from x-ray with no undue dyspnea.

VITAL SIGNS:

BP: 110/70. Respirations: 16. Heart Rate: 80 and regular. Temperature: 99°.

CHEST:

LUNGS: Fair expansion bilaterally. Percussion node is normal. There are rare, distant end inspiratory rales at both bases

HEART: No clinical cardiomegaly. There are no murmurs or gallops.

ABDOMEN:

Obese, soft, nontender.

EXTREMITIES:

1+ pretibial edema on the left with a cast on the right.

ASSESSMENT:

- 1. ACUTE ONSET OF SHORTNESS OF BREATH OF UNCLEAR ETIOLOGY.
- 2. HYPOXIA.
- 3. HYPOTHROMBINEMIA (PATIENT ON HEPARIN).
- STATUS POST PULMONARY EMBOLISM WITH RESOLUTION AND NO EVIDENCE OF RECURRENCE.
- STATUS POST OPEN REDUCTION INTERNAL FIXATION OF TRIMALLEOLAR FRACTURE ON THE RIGHT.
- 6. RULE OUT ACUTE MYOCARDIAL INFARCTION VERSUS ISCHEMIA.
- 7. POSSIBLE MUCOUS PLUG.

(continued)

PULMONARY CONSULTATION Page 2

PT. NAME:

TORRANCE, ANGELICA W.

ID NO:

IP-228904

ROOM NO:

663

ATT. PHYS.

C. BROWNLEY, M.D.

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

PHYSICAL EXAMINATION

RECOMMENDATIONS:

Cardiac enzymes should be obtained, and the ECG should be repeated as well. Recheck ABGs. Recheck PTT and discontinue Heparin until PTT diminishes to the 60s. Check CBC and comprehensive metabolic panel. Continue to observe in the ICU.

It is somewhat unclear as to what is the etiology of the episode of dyspnea. A possibility might be a mucous plug which has mobilized into the central airway and momentarily caused increased respiratory distress.

Thank you for the opportunity to assist in the management of this patient.

C.Brownley, M.D. Pulmonologist

CB:im

D: 10/24/20xx T: 10/25/20xx

PULMONARY CONSULTATION Page 3

PT. NAME:

TORRANCE, ANGELICA W.

ID NO:

IP-228904 663

ROOM NO: ATT. PHYS.

C. BROWNLEY, M.D.

ANSWERS TO PRACTICE EXERCISES

- 1. pulmono / logy CF S lung/study of
- 2. thoraco / centesis CF S chest/puncture for aspiration
- 3. naso / sinus / itis CF R nose/sinus/inflammation
- 4. hyp/ox/emia R S below or deficient/ oxygen/blood condition
- 5. pleur / itis pleura/inflammation
- 6. hyper / carb / ia R above or excessive/ carbon dioxide/ condition of
- 7. alveol / ar S alveolus (air sac)/ pertaining to
- 8. tracheo / tomy CF trachea/incision
- 9. oro / nas / al CF R S mouth/nose/ pertaining to
- 10. rhino / rrhea **CF** nose/discharge
- 11. thoraco / stomy **CF** chest/creation of an opening
- 12. tonsill / ectomy tonsil/excision (removal)
- 13. tracheo / bronch / itis CF R

- trachea (windpipe)/ bronchus/inflammation
- 14. broncho / spasm CF S bronchus (airway)/ involuntary contraction
- 15. laryngo / sten / osis CF R larynx (voice box)/ narrow/condition or increase
- 16. spiro / gram CF S breathing/record
- 17. lob / ectomy R S lobe (a portion)/excision (removal)
- 18. peri / pleur / al R S around/pleura/ pertaining to
- 19. stetho / scope CF chest/instrument for examination
- 20. pneumon/ic R S

air or lung/pertaining to

- 21. naso / pharyngo / scopy CF CF nose/pharynx (throat)/ process of examination
- 22. bronchiol / ectasis R bronchiole (little airway)/expansion or dilation
- 23. phreno / ptosis diaphragm/falling or downward displacement
- 24. pector / al R S chest/pertaining to

- 25. uvulo / palato /pharyngo / CF **CF** CF plasty uvula (grape)/palate/ throat/surgical repair or reconstruction
- 26. pneumothorax
- 27. empyema or pyothorax
- 28. hemothorax
- 29. auscultation
- 30. bronchoscope
- 31. expectoration
- 32. pleurisy or pleuritis
- 33. percussion
- 34. hypoventilation
- 35. thoracentesis or thoracocentesis
- 36. nuclear medicine
- 37. dysphonia
- 38. laryngitis
- 39. hypoxia
- 40. emphysema
- 41. epistaxis
- 42. bronchogenic carcinoma
- 43. cystic fibrosis
- 44. atelectasis
- 45. sputum
- 46. stridor
- 47. pulmonary embolism
- 48. tracheostomy
- 49. asthma
- 50. hyperventilation
- 51. *Pneumocystis* pneumonia
- 52. chronic obstructive pulmonary disease
- 53. pneumoconiosis
- 54. bronchiectasis
- 55. thoracoplasty
- 56. pneumonitis
- 57. spirometry 58. eupnea
- 59. bradypnea
- 60. dyspnea
- 61. orthopnea
- 62. apnea
- 63. tachypnea

(1	1	0.0		100	1 .
	peak expiratory flow rate	80.			hypoxia
	vital capacity	81.	=		dyspnea
66.	tuberculosis	82.	i	104.	pharynx
67.	cardiopulmonary	83.	j	105.	apnea
	resuscitation	84.	d	106.	trachea
68.	chronic obstructive	85.	C	107.	pleurisy
	pulmonary disease	86.	b		pharynx
69.	partial pressure of	87.			trachea
	carbon dioxide		auscultation		pleura
70.	upper respiratory		tachypnea		lobe
	infection		eupnea		diaphragm
71.	tidal volume		pleurisy		sinus
72.	pulmonary function		hemothorax	114.	larynx
	testing	93.	stethoscope	115.	bronchus
73.	polysomnography		epistaxis	116.	rhin/o
	continuous positive		rhonchi	117.	pneum/o
	airway pressure	96.	hemoptysis		pharyng/o
75.	CXR		rhinorrhea		thorac/o
76.	ABG	98.	emphysema	120.	laryng/o
	T&A		atelectasis		spir/o
78.			orthopnea		phren/o
79.			asthma	123.	
19.	11	101.	astiiiid	120.	01/0

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 7-1: Progress Note

1. b 2. e 3. c 4. e 5. a 6. c 7. b

Medical Record 7-2: For Additional Study

See CD-ROM for answers.





CHAPTER

8

Nervous System and Psychiatry

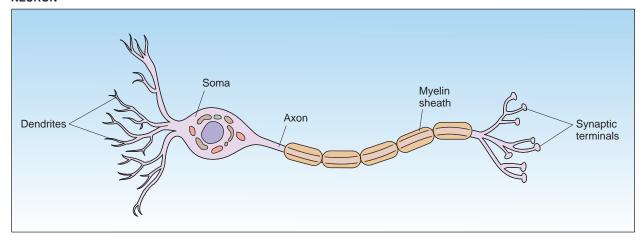
✓ Chapter 8 Checklist	LOCATION
☐ Read Chapter 8: Nervous System and Psychiatry and complete all programmed review segments.	pages 371-419
$\hfill\Box$ Review the starter set of flash cards and term components related to Chapter 8.	back of book
☐ Complete the Chapter 8 Practice Exercises and Medical Record Analysis 8-1.	pages 425-434
☐ Complete Medical Record Analysis 8-2 For Additional Study.	pages 435-438
□ Complete the Chapter 8 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 8 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 8 terms.	CD-ROM

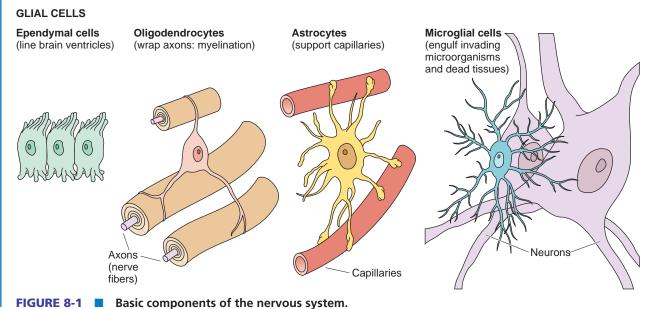
NERVOUS SYSTEM OVERVIEW

The nervous system is an intricate communication network of neurons and other structures (Fig. 8-1) that activates and controls all functions of the body and receives all input from the environment. The nervous system has three divisions:

- The central nervous system consists of the brain and spinal cord.
- The **peripheral nervous system** consists of nerves branching from the central nervous system to all parts of the body.
- The **autonomic nervous system** consists of nerves that carry involuntary impulses to smooth muscle, cardiac muscle, and various glands.

NEURON







Self-Instruction: Term Components

Study the following:

TERM COMPONENT	MEANING	
COMBINING FORMS		
cerebr/o	cerebrum (largest part of the brain)	
cerebell/o	cerebellum (little brain)	
crani/o	skull	
encephal/o	entire brain	
esthesi/o	sensation	
gangli/o	ganglion (knot)	

-asthenia	weakness
-lepsy	seizure
-mania	condition of abnormal impulse toward
-paresis	slight paralysis
-plegia	paralysis



Programmed Review: Term Components

ANSWERS	REVIEW
cerebrum cerebrum spine encephal/o	8.1 The combining form <i>cerebr/o</i> means (largest part of the brain). Thus, the adjective cerebrospinal refers to something involving both the and the The combining form referring to the entire brain is, as in the term encephalography. Recall that
recording crani/o	the suffix <i>-graphy</i> means the process of 8.2 The brain is housed inside the skull, the combining form for which is The cranium, for example, is the term for the bones of the skull.
cerebell/o adjective cerebellar	8.3 Another part of the brain is the cerebellum, the combining form for which is (meaning "little brain"). The suffix -ar is an ending. A common adjective referring to the cerebellum is
ventricul/o -stomy ventricle	8.4 Within the brain are interconnected cavities called ventricles. The combining form meaning ventricle is Recall that the surgical suffix for the creation of an opening is Thus, a ventriculostomy is the creation of an opening in a
thalam/o incision	8.5 The thalamus is a part of the brain. The combining form meaning thalamus is A thalamotomy is an into the thalamus.
meningi/o pouching meninges inflammation	8.6 The brain and spinal cord are covered with a membrane called the meninges. The two combining forms for meninges are mening/o and Recall that the suffix -cele means a hernia or Therefore, a meningocele is a pouching of the Meningitis is of the meninges.
spin/o spinal	8.7 The combining form meaning the spine is The common adjective form is
	8.8 Inside the spine is the spinal cord, a bundle of nerves coming down from the brain and, ultimately, connecting to all areas of the body. The combining form for the spinal cord (and

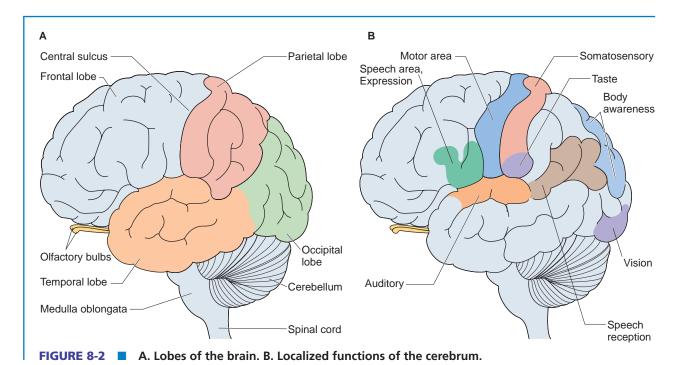
ANSWERS	REVIEW
narc/o stupor	, as in the term narcotic, referring to a class of drugs that induce
carry good	8.24 The combining form <i>phor/o</i> means to bear or Recall that the prefix <i>eu-</i> means normal or (well). Thus, the term euphoria, meaning an exaggerated sense of well-being, originates from term components meaning to carry well.
stere/o	8.25 The combining form meaning three-dimensional or solid is, as in the term stereotaxic, referring to an apparatus allowing precise localization in space.
ton/o tone one	8.26 The combining form meaning tone or tension is, as in the term monotone, which refers to speaking in an unchanging single Recall that the prefix <i>mono-</i> means
coordination without, condition of ataxia	8.27 <i>Tax/o</i> is a combining form meaning order or Combined with the prefix <i>a-,</i> meaning, and the suffix <i>-ia,</i> meaning, the term describing a condition of inability to coordinate muscle movements is
top/o place	8.28 The combining form for place is For example, the term topesthesia refers to the ability to localize the on which the skin is touched.
down	8.29 The prefix <i>cata-</i> means The term catatonia, for example, which means a state of being unresponsive and unmoving, comes from word roots meaning that all muscle activity is down.
-asthenia weakness	8.30 The suffix meaning weakness is, as in the term myasthenia, which is a condition involving of the muscles (<i>my/o</i> = muscle).
sleep -lepsy	8.31 The term narcolepsy is made from the secondary meaning of the combining form <i>narc/o</i> , which is, and the suffix, meaning seizure. In narcolepsy, sleep comes on unexpectedly and suddenly, as in a seizure.

ANSWERS	REVIEW
	8.32 The term mania means a state of abnormal elation and
	increased activity. The suffix -mania, however, refers to an
impulse or attraction	abnormal toward something. For example,
death	necromania is an abnormal attraction to
	Compare this with necrophobia, which is an abnormal
fear	of death.
-paresis	8.33 The suffix meaning a slight paralysis is,
	as in the term hemiparesis, meaning a slight paralysis in
half	of the body (right or left). Recall that the prefix
hemi-	meaning half is
paralysis	8.34 The suffix <i>-plegia</i> means, as in the term paraplegia, referring to paralysis of the legs and lower trunk.



Self-Instruction: Anatomic Terms

TERM	MEANING
CENTRAL NERVOUS SYSTEM	
central nervous system (CNS) sen'trăl nĕr'vŭs sis'tĕm	brain and spinal cord
brain (Fig. 8-2) brān	portion of the central nervous system contained within the cranium
cerebrum ser'ĕ-brйm	largest portion of the brain; divided into right and left halves, known as <i>cerebral hemispheres</i> , which are connected by a bridge of nerve fibers called the <i>corpus callosum</i> ; lobes of the cerebrum are named after the skull bones they underlie
frontal lobe frŏn'tăl lōb	anterior section of each cerebral hemisphere; responsible for voluntary muscle movement and personality
parietal lobe pă-rī'ĕ-tăl lōb	portion posterior to the frontal lobe; responsible for sensations such as pain, temperature, and touch
temporal lobe tem'pŏ-răl lōb	portion that lies below the frontal lobe; responsible for hearing, taste, and smell
occipital lobe ok-sip'i-tăl lōb	portion posterior to the parietal and temporal lobes; responsible for vision
cerebral cortex ser'ĕ-brăl kōr'teks	outer layer of the cerebrum consisting of gray matter; responsible for higher mental functions (<i>cortex</i> = bark)



TERM MEANING thalamus each of two gray matter nuclei deep within the brain; thal'ă-mŭs responsible for relaying sensory information to the cortex diencephalon dī-en-sef'ă-lon gyri convolutions (mounds) of the cerebral hemispheres jī'rī sulci shallow grooves that separate gyri sŭl'sī fissures deep grooves in the brain fish'ŭrz cerebellum (Fig. 8-3) portion of the brain located below the occipital lobes of the ser-e-hel'ŭm cerebrum; responsible for control and coordination of skeletal muscles brainstem region of the brain that serves as a relay between the cerebrum, brān'stem cerebellum, and spinal cord; responsible for breathing, heart rate, and body temperature; the three levels are the mesencephalon (midbrain), pons, and medulla oblongata series of interconnected cavities within the cerebral ventricles (Fig. 8-4) ven'tri-kĕlz hemispheres and brainstem filled with cerebrospinal fluid cerebrospinal fluid plasma-like clear fluid circulating in and around the brain and (CSF) spinal cord ser'ĕ-brō-spī'năl flū'id spinal cord column of nervous tissue from the brainstem through the

brain and the body

vertebrae; responsible for nerve conduction to and from the

spī'năl kōrd

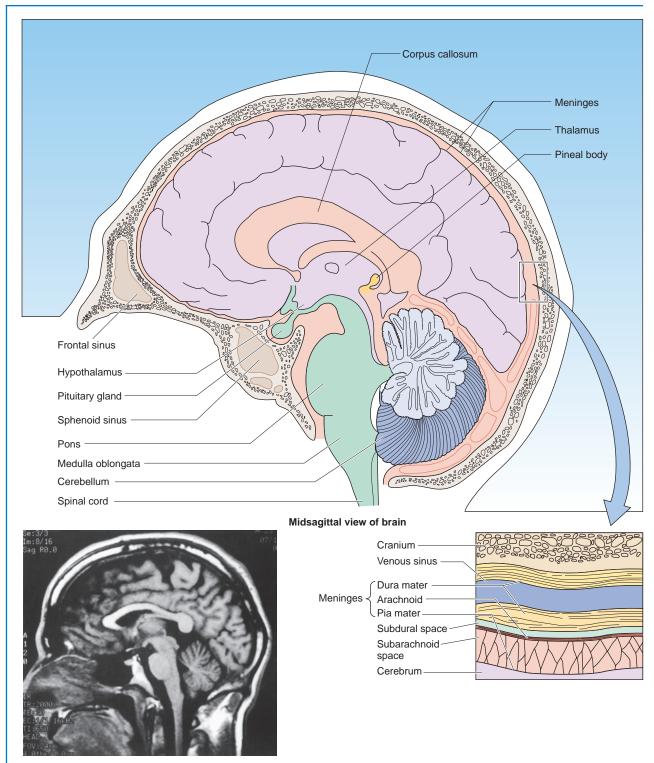
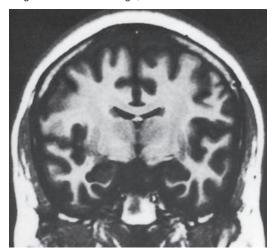


FIGURE 8-3 Midsagittal view of the brain. Inset: Normal magnetic resonance image (MRI).

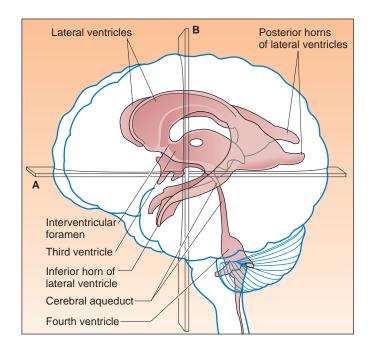


Magnetic resonance image, horizontal view A



Magnetic resonance image, coronal view B

FIGURE 8-4 Ventricles of the brain.



TERM	MEANING
meninges mĕ-nin'jēz	three membranes that cover the brain and spinal cord, consisting of the dura mater, pia mater, and arachnoid mater

PERIPHERAL NERVOUS SYSTEM

peripheral nervous system (PNS) pĕ-rif'ĕ-răl nĕr'vŭs sis'tĕm	nerves that branch from the central nervous system including nerves of the brain (cranial nerves) and spinal cord (spinal nerves)
cranial nerves krā'nē-ăl nĕrvz	12 pairs of nerves arising from the brain
spinal nerves spī'năl nĕrvz	31 pairs of nerves arising from the spinal cord

TERM	MEANING
sensory nerves sen'sŏ-rē nĕrvz	nerves that conduct impulses from body parts and carry sensory information to the brain; also called afferent nerves (<i>ad</i> = toward; <i>ferre</i> = carry)
motor nerves mō'tŏr nĕrvz	nerves that conduct motor impulses from the brain to muscles and glands; also called efferent nerves (<i>e</i> = out; <i>ferre</i> = carry)
AUTONOMIC NERVOUS SYSTEM	
autonomic nervous	nerves that carry involuntary impulses to smooth muscle,

AUTONOMIC NERVOUS SYSTEM	
autonomic nervous system (ANS) aw-tō-nom'ik nĕr'vŭs sis'tĕm	nerves that carry involuntary impulses to smooth muscle, cardiac muscle, and various glands
hypothalamus hī' pō-thal' ă-mŭs	control center for the autonomic nervous system located below the thalamus (diencephalon)
sympathetic nervous system sim-pă-thet'ik nĕr'vŭs sis'tĕm	division of the autonomic nervous system that is concerned primarily with preparing the body in stressful or emergency situations
parasympathetic nervous system par-ă-sim-pă-thet'ik něr'vŭs sis'těm	division of the autonomic nervous system that is most active in ordinary conditions; it counterbalances the effects of the sympathetic system by restoring the body to a restful state after a stressful experience.



Programmed Review: Anatomic Terms

ANSWERS	REVIEW
central brain	8.35 The brain and spinal cord comprise the nervous system. The is the part of the central nervous system within the cranium.
cerebrum frontal lobe	8.36 The largest portion of the brain, the, is divided into the two cerebral hemispheres. The lobe at the front of each cerebral hemisphere, called the, controls muscle movement and personality. Behind the frontal lobe is the parietal lobe.
parietal	8.37 The lobe behind the frontal lobe, called thelobe, is responsible for sensations such as pain, temperature, and touch. Below the frontal lobe is the temporal lobe.
temporal	8.38 The lobe below the frontal lobe, called thelobe, is responsible for hearing, taste, and smell. Posterior to the parietal and temporal lobes is the occipital lobe.

ANSWERS	REVIEW
occipital	8.39 The lobe posterior to the parietal and temporal lobes, the lobe, is responsible for vision.
cortex	8.40 The Latin word cortex means bark, referring to an outer layer. The outer layer of the cerebrum is the cerebral, which is the gray matter responsible for higher mental functions. Sensory information is relayed to the cortex by the thalamus (diencephalon).
thalamus, diencephalon thalami	8.41 The two gray matter nuclei deep within the brain that relay sensory information to the cortex are called the or The plural of thalamus is
gyri, gyrus sulci sulcus fissures	8.42 Gyri, sulci, and fissures are physical characteristics of the cerebral hemispheres. Convolutions (mounds) of the hemispheres are called The singular of gyri is The shallow grooves that separate gyri are called The singular of sulci is The deep grooves in the brain are called
cerebellum	8.43 Below the occipital lobes is the cerebellum. The is responsible for controlling skeletal muscles. The cerebellum and cerebrum both communicate with the spinal cord through the brainstem.
brainstem	8.44 The spinal cord communicates with the cerebrum and cerebellum through the, which is also responsible for breathing, heart rate, and body temperature. Interconnected cavities within the brainstem and cerebral hemispheres are called ventricles.
ventricles	8.45 Cerebrospinal fluid fills the, which are the cavities in the cerebral hemispheres and brainstem. The plasma-like fluid circulating in and around the brain and spinal cord is called the fluid.
spinal cord	8.46 The column of nervous tissue that descends from the brainstem though the vertebrae of the spine is the The spinal cord and brain are covered by membranes called meninges.

ANSWERS	REVIEW
meninges	8.47 The three membranes covering the brain are called the
peripheral cranial	8.48 Nerves branch from the central nervous system to the peripheral nervous system to reach all areas of the body. Cranial nerves, spinal nerves, sensory nerves, and motor nerves are all part of the nervous system. The 12 pairs of nerves arising from the brain are the nerves. The 31 pairs of nerves arising from the spinal cord are the
spinal	nerves.
sensory	8.49 The nerves in the peripheral nervous system that carry sensory information to the brain are the nerves. The nerves that carry motor impulses from the brain to the muscles and glands are the nerves.
autonomic	8.50 The autonomic nervous system controls involuntary functions of smooth muscle, cardiac muscle, and various glands. The hypothalamus is the control center for the nervous system.
hypothalamus below	8.51 The autonomic nervous system is controlled by the, which is located below the thalamus. Recall that the prefix <i>hypo-</i> means or deficient.
sympathetic parasympathetic	8.52 The sympathetic nervous system and the parasympathetic nervous system are divisions of the autonomic nervous system. In stressful or emergency situations, the



Self-Instruction: Nervous System Symptomatic Terms

TERM	MEANING
aphasia ă-fā'zē-ă dysphasia dis-fā'zē-ă	impairment because of localized brain injury that affects the understanding, retrieving, and formulating of meaningful and sequential elements of language, as demonstrated by an inability to use or comprehend words; occurs as a result of a stroke, head trauma, or disease

Glasgow Coma Scale			A.N	Л.	P.N	1.					A.N	Л.			
Assessment	Reaction	Score	8	10	12	2	4	6	8	10	12	2	4	6	8
Eye Opening	Spontaneously	4	X						Χ	Χ	Χ	X	Χ		
Response	To speech	3		Χ				X							
	To pain	2			X	Х	Х								
	No response	1													
Motor Response	Obeys verbal command	6	X						Х	Х	X	Х	X		
	Localizes pain	5		Χ	Χ										
	Flexion withdrawal	4				Х		Х							
	Flexion	3					Χ								
	Extension	2													
	No response	1													
Verbal Response	Oriented x3	5	Х						X	Χ	Х	Х	Х		
	Conversation confused	4		Χ				Х							
	Inappropriate speech	3			Χ										
	Incomprehensible sounds	2				Х	Χ								
	No response	1													

FIGURE 8-5 Glasgow Coma Scale scoring for a child. A score of 3 to 8 denotes severe trauma; 9 to 12, moderate trauma; and 13 to 15, slight trauma. Note the gradual improvement from coma in this example.

TERM	MEANING
coma (Fig. 8-5) kō'mă	a general term referring to levels of decreased consciousness with varying responsiveness; a common method of assessment is the Glasgow Coma Scale
delirium dē-lir'ē-йт	a state of mental confusion caused by disturbances in cerebral function; the many causes include fever, shock, and drug overdose (<i>deliro</i> = to draw the furrow awry when plowing, to go off the rails)
dementia dē-men'shē-ă	an impairment of intellectual function characterized by memory loss, disorientation, and confusion (<i>dementio</i> = to be mad)
motor deficit mō'tŏr def'i-sit	loss or impairment of muscle function
sensory deficit sen'sŏ-rē def'i-sit	loss or impairment of sensation
neuralgia nū-ral' jē-ă	pain along the course of a nerve
paralysis pă-ral'i-sis	temporary or permanent loss of motor control

TERM	MEANING				
flaccid paralysis flak'sid pă-ral'i-sis	defective (flabby) or absent muscle control caused by a nerve lesion				
spastic paralysis spas'tik pă-ral'i-sis	stiff and awkward muscle control caused by a central nervous system disorder				
hemiparesis hem'ē-pă-rē'sis	partial paralysis of the right or left half of the body				
sciatica sī-at'i-kă	pain that follows the pathway of the sciatic nerve, caused by compression or trauma of the nerve or its roots				
seizure sē'zhŭr	sudden, transient disturbances in brain function resulting from an abnormal firing of nerve impulses; may or may not be associated with convulsion				
convulsion kon-vŭl'shŭn	to pull together; type of seizure that causes a series of sudden, involuntary contractions of muscles				
syncope sin'kŏ-pē	fainting				
tactile stimulation tak'til stim-yū-lā'shŭn	evoking a response by touching				
hyperesthesia hī'pĕr-es-thē'zē-ă	increased sensitivity to stimulation such as touch or pain				
paresthesia par-es-thē'zē-ă	abnormal sensation of numbness and tingling without objective cause				

Programmed Review: Nervous System Symptomatic Terms

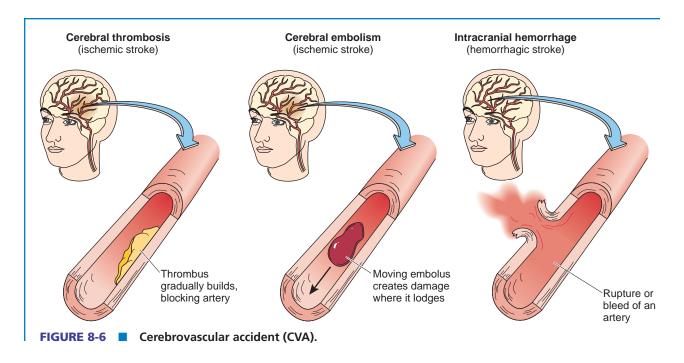
ANSWERS	REVIEW
speech	8.53 Linking <i>phas/o</i> (the combining form meaning) with
without	<i>a-</i> (the prefix meaning) and <i>-ia</i> (the suffix meaning
condition of) forms the term describing one's
	inability to use or comprehend words due to localized brain injury
aphasia	(such as occurs as the result of a stroke):
faulty	8.54 The prefix <i>dys-</i> means painful, difficult, or, and
dysphasia	is used in the less common synonym for aphasia:
	8.55 A decreased level of consciousness, measured with the Glasgow
coma	Coma Scale, is called a
	8.56 Mental and intellectual function can be disturbed by medical
	or psychiatric conditions or drugs. A state of mental confusion
delirium	resulting from disturbed cerebral function is called
	The impairment of intellectual function characterized by memory loss
dementia	and disorientation is

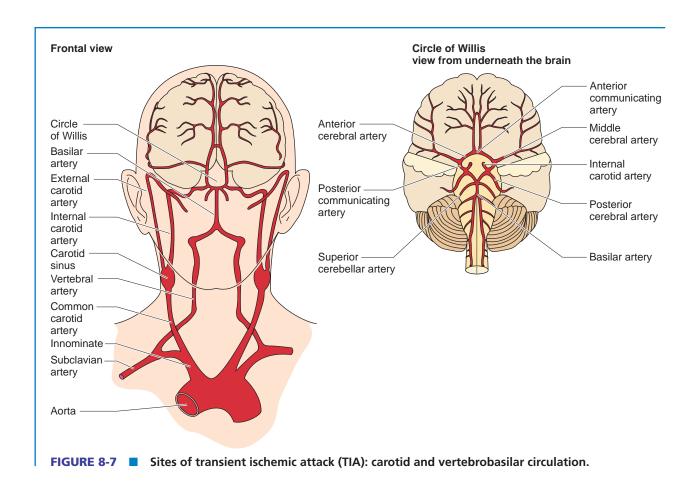
sensation of numbness and tingling is _____

paresthesia

Self-Instruction: Nervous System Diagnostic Terms

TERM	MEANING
agnosia ag-nō'zē-ă	any of many types of loss of neurologic function involving interpretation of sensory information
astereognosis ă-stĕr'ē-og-nō'sis	inability to judge the form of an object by touch (e.g., a coin from a key)
atopognosis ă-top-og-nō'sis	inability to locate a sensation properly, such as an inability to locate a point touched on the body
Alzheimer disease awlz'hī-mĕr di-zēz'	disease of structural changes in the brain resulting in an irreversible deterioration that progresses from forgetfulness and disorientation to loss of all intellectual functions, total disability, and death
amyotrophic lateral sclerosis (ALS) ă-mī-ō-trō'fik lat'ĕr-ăl sklĕ-rō'sis	condition of progressive deterioration of motor nerve cells resulting in total loss of voluntary muscle control; symptoms advance from muscle weakness in the arms and legs, to the muscles of speech, swallowing, and breathing, to total paralysis and death; also known as Lou Gehrig disease
cerebral palsy (CP) ser'ĕ-brăl pawl'zē	condition of motor dysfunction caused by damage to the cerebrum during development or injury at birth; characterized by partial paralysis and lack of muscle coordination (<i>palsy</i> = paralysis)
cerebrovascular disease ser'ĕ-brō-vas'kyū-lăr di-zēz'	disorder resulting from a change within one or more blood vessels of the brain
cerebral arteriosclerosis ser'ĕ-brăl ar-tēr'ē-ō-skler-ō'sis	hardening of the arteries of the brain
cerebral atherosclerosis ser'ĕ-brăl ath'er-ō-skler-ō'sis	condition of lipid (fat) buildup within the blood vessels of the brain (<i>ather/o</i> = fatty [lipid] paste)
cerebral aneurysm ser'ĕ-brăl an'yū-rizm	dilation of a blood vessel in the brain (<i>aneurysm</i> = dilation or widening)
cerebral thrombosis ser'ĕ-brăl throm-bō'sis	presence of a stationary clot in a blood vessel of the brain
cerebral embolism ser'ĕ-brăl em'bo-lizm	obstruction of a blood vessel in the brain by an embolus transported through the circulation
cerebrovascular accident (CVA) (Fig. 8-6) ser'ĕ-brō-vas'kyū-lăr ak'si-dent stroke strōk	damage to the brain caused by cerebrovascular disease, such as occlusion of a blood vessel by a thrombus or embolus (ischemic stroke) or intracranial hemorrhage after rupture of an aneurysm (hemorrhagic stroke)
transient ischemic attack (TIA) (Fig. 8-7) tranz'ē-ent is-kē'mik ă-tak'	brief episode of loss of blood flow to the brain, usually caused by a partial occlusion that results in temporary neurologic deficit (impairment); often precedes a CVA
encephalitis en-sef-ă-lī'tis	inflammation of the brain





TERM	MEANING
epilepsy (see Fig. 8-12) ep'i-lep'sē	disorder affecting the central nervous system; characterized by recurrent seizures
tonic-clonic seizure ton'ik-klon'ik sē'zhŭr	stiffening-jerking; a major motor seizure involving all muscle groups; previously termed grand mal (big bad) seizure
absence seizure ab'sens sē'zhŭr	seizure involving a brief loss of consciousness without motor involvement; previously termed petit mal (little bad) seizure
partial seizure par'shăl sē'zhŭr	seizure involving only limited areas of the brain with localized symptoms
glioma glī-ō'mă	tumor of glial cells graded according to degree of malignancy
herniated disk or disc (Fig. 8-8) hĕr'nē-ā-tĕd disk	protrusion of a degenerated or fragmented intervertebral disk so that the nucleus pulposus protrudes, causing compression on the nerve root
herpes zoster hĕr'pēz zos'tĕr	viral disease affecting the peripheral nerves, characterized by painful blisters that spread over the skin following the affected nerves, usually unilateral; also known as shingles
Huntington chorea hŭn'ting-tŏn kōr-ē'ă Huntington disease (HD) hŭn'ting-tŏn di-zēz'	hereditary disease of the central nervous system characterized by bizarre, involuntary body movements and progressive dementia (<i>choros</i> = dance)
hydrocephalus (Fig. 8-9) <i>hī-drō-sef'ă-lŭs</i>	abnormal accumulation of cerebrospinal fluid in the ventricles of the brain as a result of developmental anomalies, infection, injury, or tumor
meningioma mĕ-nin'jē-ō'mă	benign tumor of the coverings of the brain (the meninges)
meningitis men-in-jī'tis	inflammation of the meninges

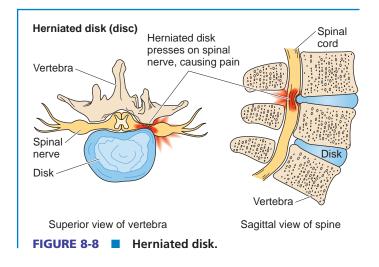




FIGURE 8-9 Sonogram showing hydrocephalus in early pregnancy.

TERM	MEANING
migraine headache mī'grān hed'āk	paroxysmal (sudden, periodic) attacks of mostly unilateral headache, often accompanied by disordered vision, nausea, or vomiting, lasting hours or days and caused by dilation of arteries
multiple sclerosis (MS) (Fig. 8-10) mŭl'ti-pul sklĕ-rō'sis	disease of the central nervous system characterized by the demyelination (deterioration of the myelin sheath) of nerve fibers, with episodes of neurologic dysfunction (exacerbation) followed by recovery (remission)

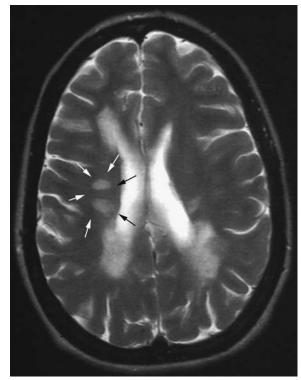


FIGURE 8-10 Magnetic resonance image (MRI) of the brain. Arrows indicate plaque formation in patient with multiple sclerosis.



FIGURE 8-11 Spina bifida with myelomeningocele. The infant also has hydrocephaly.

TERM	MEANING
myasthenia gravis mī-as-thē'nē-ă gra'vis	autoimmune disorder that affects the neuromuscular junction, causing a progressive decrease in muscle strength; activity resumes and strength returns after a period of rest
myelitis mī'ĕ-lī'tis	inflammation of the spinal cord
narcolepsy nar'kō-lep-sē	sleep disorder characterized by a sudden, uncontrollable need to sleep, attacks of paralysis (cataplexy), and dreams intruding while awake (hypnagogic hallucinations)
neural tube defects mīr'ăl tūb dē'fektz	congenital deformities of the brain and spinal cord caused by incomplete development of the neural tube, the embryonic structure that forms the nervous system
anencephaly an'en-sef'ă-lē	defect in closure of the cephalic portion of the neural tube that results in incomplete development of the brain and bones of the skull; the most drastic neural tube defect usually results in a stillbirth
spina bifida (Fig. 8-11) spī'nă bĭ'fi-dă	defect in development of the spinal column characterized by the absence of vertebral arches, often resulting in pouching of the meninges (meningocele) or of the meninges and spinal cord (meningomyelocele); considered to be the most common neural tube defect (<i>spina</i> = spine; <i>bifida</i> = split into two parts)
Parkinson disease pahr'kin-sĕn di-zēz'	condition of slowly progressive degeneration in an area of the brainstem (substantia nigra) resulting in a decrease of dopamine (a chemical neurotransmitter necessary for proper movement); characterized by tremor, rigidity of muscles, and slow movements (bradykinesia); usually occurs later in life
plegia plē' jē-ă	paralysis
hemiplegia hem-ē-plē'jē-ă	paralysis on one side of the body
paraplegia par-ă-plē'jē-ă	paralysis from the waist down
quadriplegia kwah'dri-plĕ'jē-ă	paralysis of all four limbs
poliomyelitis po'lē-ō-mī'ĕ-lī'tis	inflammation of the gray matter of the spinal cord caused by a virus, often resulting in spinal and muscle deformity and paralysis (<i>polio</i> = gray)
polyneuritis pol'ē-mī-rī-tis	inflammation involving two or more nerves, often caused by a nutritional deficiency, such as lack of thiamine
sleep apnea slēp ap'nē-ă	periods of breathing cessation (10 seconds or more) that occur during sleep, often causing snoring



Programmed Review: Nervous System Diagnostic Terms

ANSWERS	REVIEW
gnos/o, without	8.67 Recall that the combining form that means knowing is The prefix <i>a</i> - means The general term for many types of loss of neurologic function (meaning "not knowing") is therefore. The combining form
agnosia stere/o	knowing") is therefore The combining form meaning three-dimensional is The type of agnosia
astereognosis top/o atopognosis	in which a person cannot judge the shape of an object by touch is termed Recall that the combining form meaning place or location is The type of agnosia in which a person cannot locate a sensation on the body is called
Alzheimer	8.68 Named for the German neurologist who researched dementia, disease causes structural changes in the brain resulting in mental deterioration.
cerebral palsy	8.69 Palsy means a partial paralysis. The condition of partial paralysis and lack of muscle coordination caused by damage to the cerebrum is called (CP).
cerebrovascular	8.70 The combining form <i>vascul/o</i> refers to blood vessels. A disease affecting blood vessels in the cerebrum is called
condition	disease. The combining form <i>scler/o</i> means hard. Recall that the suffix <i>-osis</i> means increase or The term for a condition of hardening of the arteries in the brain is cerebral
arteriosclerosis	The combining form <i>ather/o</i> means fatty
cerebral atherosclerosis	paste. The condition of a hardening of a pasty lipid buildup in the blood vessels of the brain is called
aneurysm	8.71 The dilation of a blood vessel in the brain is called a cerebral The Greek word thrombos means a clot. A stationary blood clot in a blood vessel in the brain is called a
cerebral thrombosis embolism	A blood clot carried in the circulation that obstructs a blood vessel in the brain is called a cerebral

ANSWERS	REVIEW
cerebrovascular accident ischemic hemorrhagic	8.72 Occlusion of a blood vessel in the brain by a thrombus, embolus, or bleeding after rupture of an aneurysm may cause brain damage known as a stroke or (CVA). Thrombotic and embolic strokes are classified as strokes, because they result in a loss of blood flow to brain tissues. Damage caused by the hemorrhage of blood into brain tissue is called a stroke.
transient ischemic attack	8.73 Ischemia is a condition in which blood flow to an area is reduced. A brief episode of loss of blood flow to the brain caused by a partial occlusion of a blood vessel is called a
mening/o, -itis meningitis	8.74 Recall that the combining form meaning meninges is The suffix meaning inflammation is Therefore, the term for inflammation of the meninges is
head brain encephalitis	8.75 Formed using the prefix <i>en-</i> , meaning in, and <i>cephal/o</i> , meaning, <i>encephal/o</i> is a combining form meaning the entire The term for inflammation of the brain is
myel/o myelitis poliomyelitis	8.76 The combining form for the spinal cord is Inflammation of the spinal cord is termed The combining form <i>poli/o</i> means gray. An inflammation of the gray matter of the spinal cord, caused by a virus, is called
neur/o many polyneuritis	8.77 The combining form meaning nerve is The prefix <i>poly-</i> means The term for inflammation of two or more nerves is
epilepsy tension	8.78 The disorder of the central nervous system characterized by recurrent seizures is Recall that the combining form <i>ton/o</i> refers to muscle tone or The type of epileptic seizure in which muscles stiffen and jerk is called
tonic-clonic absence	seizure. A type of epileptic seizure in which a brief loss of consciousness occurs (the person seems to be absent for a moment) is called an seizure. A

ANSWERS	REVIEW
partial	seizure affects only limited areas of the brain with
	localized symptoms.
gli/o	8.79 The combining form meaning glue is, the origin
	of the name for glial cells, which are thought to "glue" together
-oma	neurons. The suffix meaning tumor is A malignant
glioma	(cancerous) tumor of glial cells is called a
	A benign (noncancerous) tumor of the meninges is called
meningioma	. (Note: Word structuring alone does not
	indicate whether a tumor is cancerous. Rely on a good medical dictionary or oncology reference for clarification.)
	, cr
	8.80 A hernia is a protrusion of a part from its normal location.
herniated	A degenerated or fragmented intervertebral disk that protrudes and
nermated	compresses a nerve is called a disk.
	8.81 A herpes virus causes skin blisters following an affected
la cum co	nerve, often in a belt-like pattern on the skin. The Greek word
herpes zoster	zoster means girdle or belt. This condition is called
Zostei	
	8.82 The term chorea comes from a Greek word meaning
	dance. A chorea is a spasmodic involuntary movement of muscles. A hereditary type of chorea that is characterized by
	bizarre body movements and progressive dementia is called
Huntington chorea	or
Huntington disease	(HD).
	8.83 The combining form <i>hydr/o</i> means water or fluid. The
	combining form <i>cephal/o</i> means head. These two combining forms
	are the origin of the term for an abnormal accumulation of
hydrocephalus	cerebrospinal fluid in the brain:
	8.84 The kind of severe headache accompanied by disordered
migraine	vision, nausea, and vomiting is a headache.
	8.85 Recall that <i>scler/o</i> is the combining form meaning
hard	A disease of the central nervous system involving
	deterioration of the myelin sheath of nerve fibers and multiple
	patches of hard plaques in the brain and spinal cord is called
multiple sclerosis	

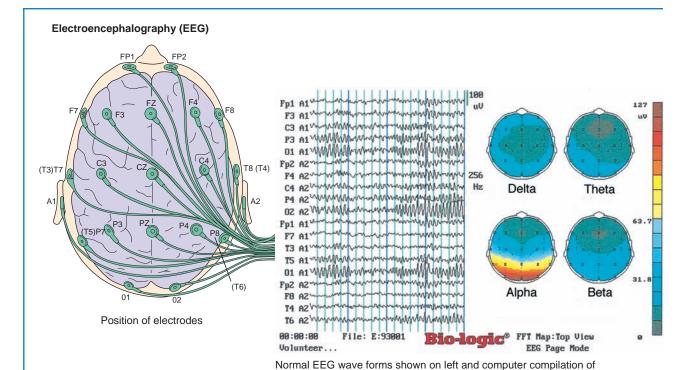
ANSWERS	REVIEW
without, muscle nourishment pertaining to amyotrophic lateral sclerosis, Lou Gehrig	8.86 Formed by the combination of <i>a</i> -, meaning, <i>my/o</i> , meaning, <i>troph/o</i> , meaning development or, and - <i>ic</i> , meaning, the word amyotrophic is used in naming the neurologic condition characterized by the progressive deterioration of motor nerve cells that results in total loss of voluntary muscle control: (ALS). This condition is also called disease (named after the American baseball player who had the condition).
weakness myasthenia gravis	8.87 The combining form <i>my/o</i> means muscle, and the suffix <i>-asthenia</i> means Thus, a term for muscle weakness is An autoimmune disorder that causes a progressive decrease in muscle strength is myasthenia
sleep, seizure narcolepsy	8.88 Recall that the combining form <i>narc/o</i> means stupor or The suffix <i>-lepsy</i> means A sleep disorder in which the person falls asleep as quickly as if in a seizure is called
movement Parkinson	8.89 Bradykinesia, a condition of slow, along with tremor and rigidity of muscles are symptoms first documented by the British physician for whom this slowly progressive, degenerative neurologic condition was named: disease.
paralysis half hemiplegia paraplegia quadri- quadriplegia	8.90 Recall that the suffix <i>-plegia</i> means The prefix <i>hemi-</i> means, and paralysis of half (one side) of the body is called Paralysis from the waist down is called Recall that the prefix meaning four is Therefore, the term for paralysis of all four limbs is
sleep apnea	8.91 The Greek word apnoia means want of breath. The term for a condition in which breathing stops for short periods during sleep is

ANSWERS	REVIEW
nerve	8.92 Neural, the adjective pertaining to, is used to
	name the embryonic tube that forms the nervous system, called the
neural tube	Congenital deformities caused by its
	incomplete development are known as neural tube defects. The
without	term formed by the combination of an-, meaning,
entire brain	encephal/o meaning, and -y, meaning
process of	condition or, describes the most drastic
	type of defect caused by the incomplete development of the brain
anencephaly	and bones of the skull: The word describing
	that which is split into two parts is used in the name for the most
	common neural tube defect, which is characterized by the absence
bifida	of spinal vertebral arches: spina The suffix -cele,
pouching	meaning or hernia, is used to describe conditions
	that often accompany spina bifida: pouching of the meninges
meningocele	() or pouching of the meninges and spinal
meningomyelocele	cord ().



Self-Instruction: Nervous System Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
electrodiagnostic procedures ē-lek'trō-dī-ag-nos'tik prō-sē'jŭrz	diagnostic procedures used to evaluate the function of the nervous system by recording the electrical signals produced in the brain, spinal cord, and peripheral nerves
electroencephalogram (EEG) (Fig. 8-12) ē-lek'trō-en-sef'ă-lō-gram	record of the minute electrical impulses of the brain; used to identify neurologic conditions that affect brain function and level of consciousness
evoked potentials (Fig. 8-13) ē-vokt' pō-ten'shălz	record of minute electrical potentials (waves) that are extracted from ongoing EEG activity to diagnose auditory, visual, and sensory pathway disorders; also used to monitor the neurologic function of patients during surgery
polysomnography (PSG) (Fig. 8-14) pol'ē-som-nog'ră-fē	recording of various aspects of sleep (e.g., eye and muscle movements, respiration, and EEG patterns) to diagnose sleep disorders
lumbar puncture (LP) lŭm'bar pŭnk'chūr	introduction of a specialized needle into the spine in the lumbar region for diagnostic or therapeutic purposes, such as to obtain CSF for testing; also called spinal tap



frequency bands (delta, theta, alpha, and beta) mapped on right Electroencephalography (EEG). FIGURE 8-12

TEST OR PROCEDURE

magnetic resonance imaging (MRI) (see Figs. 8-3, 8-4, and 8-10) mag-net'ik rez'ō-nănts im'ă-jing

EXPLANATION

nonionizing imaging technique using magnetic fields and radiofrequency waves to visualize anatomic structures (especially soft tissue), such as the tissues of the brain and spinal cord



FIGURE 8-13 Use of evoked potentials to monitor neurologic function during surgery. Photo courtesy of Cadwell Laboratories, Inc.



FIGURE 8-14 Polysomnography (PSG).

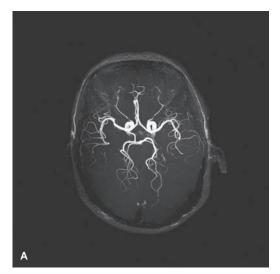




FIGURE 8-15 Magnetic resonance angiography (MRA). A. Contrast-enhanced intracranial MRA showing circulation of the circle of Willis. B. Contrast-enhanced extracranial MRA showing carotid circulation. (Compare to the illustration of anatomy in Fig. 8-7.)

TEST OR PROCEDURE

magnetic resonance angiography (MRA)

(Fig. 8-15) mag-net'ik rez'ō-nănts anjē-og'ră-fē

intracranial MRA

(Fig. 8-15, A) in'tră-krā'nē-ăl em-ar-ā

extracranial MRA

(Fig. 8-15, B) eks'tră-krā'nē-ăl em-ar-ā

nuclear medicine imaging

mī'klē-ăr med'i-sen im' ăj-ing

single-photon emission computed tomography (SPECT) brain scan

sing'gel-fō'ton ē-mī'shŭn kom-pyūt'ĕd tō-mog'ră-fē brān skan

positron-emission tomography (PET)

(Fig. 8-16) poz'i-tron-ē-mish'ŭn tō-mog'ră-fē

EXPLANATION

magnetic resonance imaging of blood vessels to detect pathologic conditions, such as thrombosis and atherosclerosis

magnetic resonance image of the head to visualize the vessels of the circle of Willis (common site of cerebral aneurysm, stenosis, or occlusion)

magnetic resonance image of the neck to visualize the carotid artery

radionuclide organ imaging

scan combining nuclear medicine and computed tomography to produce images of the brain after the administration of radioactive isotopes

technique combining nuclear medicine and computed tomography to produce images of brain anatomy and corresponding physiology; used to study stroke, Alzheimer disease, epilepsy, metabolic brain disorders, chemistry of nerve transmissions in the brain, and so on; provides greater accuracy than SPECT, but is used less often because of cost and the limited availability of the radioisotopes

Positron emission tomography (PET) scans Warm colors (red and yellow) indicate a higher rate of metabolism and brain activity in the normal brain when compared with the brain of the Alzheimer patient Area of scan PET scan of healthy brain PET scan of Alzheimer brain

FIGURE 8-16 Positron-emission tomography (PET) scans of the brain.

TEST OR PROCEDURE	EXPLANATION
radiography rā'dē-og'ră-fē	x-ray imaging
cerebral angiogram ser'ĕ-brăl an'jē-ō-gram	x-ray of blood vessels in the brain after intracarotid injection of contrast medium
computed tomography (CT) of the head kom-pyū'tĕd tō-mog'ră-fē	computed tomographic (x-ray) images of the head used to visualize abnormalities, such as brain tumors and malformations
myelogram mī'ĕ-lō-gram	x-ray of the spinal cord obtained after intraspinal injection of contrast medium
reflex testing rē'fleks test'ing	test performed to observe the body's response to a stimulus
deep tendon reflexes (DTR) dēp ten'dŏn rē'fleks-ĕz	involuntary muscle contraction after percussion at a tendon (e.g., patella or Achilles) indicating function; positive findings

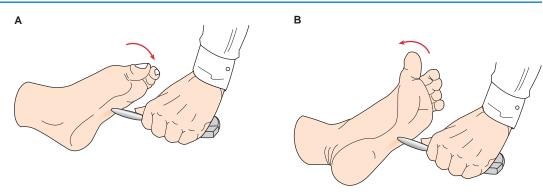


FIGURE 8-17 Reflex testing. A. Normal plantar reflex. B. Babinski sign.



FIGURE 8-18 Transcranial Doppler sonography.

TEST OR PROCEDURE	EXPLANATION
Babinski sign (Fig. 8-17) <i>bă-bin'skē sīn</i>	are either no reflex response or an exaggerated response to stimulus; numbers are often used to record responses Ø = no response (absent reflex) 1+ = diminished response 2+ = normal response 3+ = more brisk than average response 4+ = hyperactive response pathologic response to stimulation of the plantar surface of the foot; a positive sign is indicated when the toes dorsiflex
Babinski reflex bă-bin'skē rē'fleks	(curl upward)
transcranial Doppler sonogram (Fig. 8-18) trans-krā'nē-ăl dop'lĕr son'ō-gram	image made by sending ultrasound beams through the skull to assess blood flow in intracranial vessels; used in the diagnosis and management of stroke and head trauma



Programmed Review: Nervous System Diagnostic Tests and Procedures

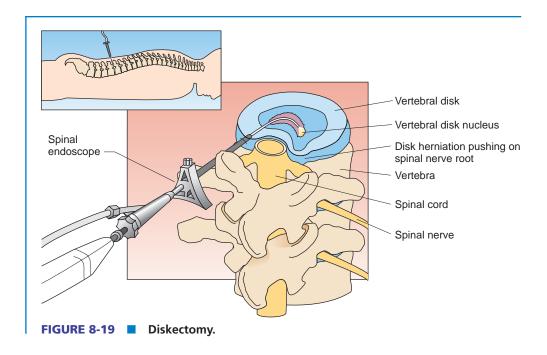
ANSWERS	REVIEW
	8.93 A wide variety of tests and procedures are used to
	diagnose conditions of the nervous system, including several
	electrodiagnostic procedures. The combining form referring to
	electricity is electr/o. The combining form referring to the entire
encephal/o	brain is Recall that the suffix -gram means
record	An EEG is a record of electrical impulses in

ANSWERS	REVIEW
electroencephalogram evoked	the brain; EEG is an abbreviation for Minute electrical waves sorted out of the EEG activity to diagnose specific nerve pathway disorders are called potentials. (Potential is a term referring to electrical charges.)
somn/o poly- recording polysomnography	8.94 In addition to <i>hypn/o</i> and <i>somn/i</i> , a combining form meaning sleep is The prefix meaning many is The suffix <i>-graphy</i> means process of From these three components comes the term for another electrodiagnostic procedure that measures various physiologic aspects of sleep: (PSG).
lumbar puncture	8.95 The procedure in which a specialized needle is introduced into the lumbar spine, such as to obtain a sample of cerebrospinal fluid for examination, is called a (LP).
magnetic resonance	8.96 A nonionizing imaging technique using magnetic fields to visualize structures such as tissues of the brain and spinal cord is called imaging (MRI).
magnetic resonance angiography crani/o, within intracranial outside extracranial	8.97 An MRI technique for imaging blood vessels (including the combining form angi/o, meaning vessel) is termed (MRA). The combining form for skull is The prefix intra- means Magnetic resonance imaging of the head to visualize the vessels of the circle of Willis is called MRA. The prefix extra- means The term for magnetic resonance imaging of the neck to depict the carotid arteries is called MRA.
medicine photon emission tomography	8.98 Imaging a structure after administration of a radionuclide is called nuclear imaging. A specialized brain scan that combines nuclear medicine with computed tomography (CT) is called single computed (SPECT).
emission tomography	8.99 Another technique that combines nuclear medicine and CT to study brain anatomy and physiology is positron (PET).

ANSWERS	REVIEW
process recording radiography cerebral angi/o cerebral angiogram	8.100 Recall that the suffix <i>-graphy</i> means the of The process of recording x-ray images is called The adjective form of cerebrum, pertaining to the largest part of the brain, is Again, the combining form for blood vessel is An x-ray of the blood vessels of the cerebrum is called a
computed tomography	8.101 Cross-sectional x-ray images of the brain produced by are also used to visualize abnormalities, such as brain tumors.
myel/o, record myelogram	8.102 The combining form meaning spinal cord is Again, the suffix -gram means An x-ray record of the spinal cord using an intraspinal contrast medium is called a
Reflex deep tendon	8.103 A reflex is the body's automatic response to a stimulus. testing is performed to observe such responses. Reflexes that involve involuntary muscle contraction after percussion at a tendon are called reflexes (DTR).
Babinski	8.104 A response to stimulation of the plantar surface of the foot is a pathologic reflex called the sign, which is named for Babinski, the French neurologist who discovered it.
across transcranial sonogram	8.105 Ultrasound is also called sonography. The prefix <i>trans</i> -means or through. The record of an ultrasound image made by sending ultrasound waves through the skull is called a

Self-Instruction: Nervous System Operative Terms

TERM	MEANING
carotid endarterectomy ka-rot'id end'ar-tĕr-ek'tŏ-mē	incision and coring of the lining of the carotid artery to clear a blockage caused by the buildup of atherosclerotic plaque or a clot; an open procedure used to treat patients who are at risk for stroke



TERM	MEANING
craniectomy krā'nē-ek'tō-mē	excision of part of the skull to approach the brain
craniotomy krā-nē-ot'ō-mē	incision into the skull to approach the brain
diskectomy or discectomy (Fig. 8-19) disk-ek'tŏ-mē	removal of a herniated disk; often done percutaneously (per = through; cutaneous = skin)
endovascular neurosurgery en'dō-vas'kyū-lar nūr'ō-sŭr'jĕr-ē interventional neuroradiology in'tĕr-ven'shŭn-ăl nū'rō-rā- dē-ol'ŏ-jē	minimally invasive techniques for diagnosis and treatment of disorders within blood vessels of the neck, brain, and spinal cord using specialized catheters inserted percutaneously (through the skin) into the femoral artery (in the groin) and guided by angiographic imaging to the treatment site; performed in a specialized angiographic laboratory by interventional neuroradiologists; common procedures are: • percutaneous transluminal angioplasty (PTA) with stent (e.g., carotid PTA) • embolization (plugging) of intracranial aneurysms and vascular malformations
laminectomy lam'i-nek'tŏ-mē	excision of one or more laminae of the vertebrae to approach the spinal cord
vertebral lamina (see Fig. 4-6) ver'tĕ-brăl lam'i-nă	flattened posterior portion of the vertebral arch
microsurgery (Fig. 8-20) mī'krō-sŭr'jĕr-ē	use of a microscope to dissect minute structures during surgery



FIGURE 8-20 Microscope for neurologic surgery.

TERM	MEANING
neuroplasty nนิ' rō-plas-tē	surgical repair of a nerve
spondylosyndesis (Fig. 8-21) spon'di-lō-sin-dē'sis	spinal fusion

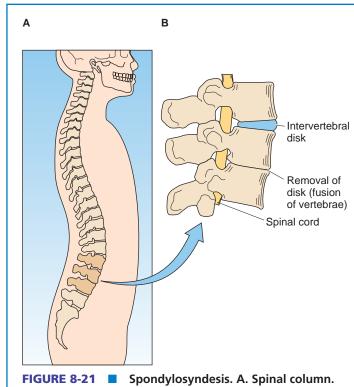


FIGURE 8-21 B. Spinal fusion.



Programmed Review: Nervous System Operative Terms

ANSWERS	REVIEW
within artery removal o endo-	8.106 Endarterectomy, the open surgical technique that cuts out atherosclerotic blockage from the core lining of the carotid artery, was named by linking <i>endo-</i> , the prefix meaning, to <i>arteri/o</i> , the combining form meaning, and the suffix <i>-ectomy</i> , meaning excision or Note that occasionally, when a prefix ends in a vowel and the root begins with a vowel, the final vowel is dropped from the prefix. This is why the letter is dropped from the prefix in this term.
-ectomy craniectomy	8.107 The operative suffix meaning excision is The excision of part of the skull, needed to reach the brain surgically, is termed
diskectomy or discectomy	8.108 The excision of a herniated spinal disk is termed a
lamina laminectomy	8.109 The flattened posterior portion of the vertebral arch is called a The excision of one or more laminae is termed a
incision	8.110 The operative suffix <i>-tomy</i> means An incision into the skull to approach the brain is a
microsurgery	8.111 Use of a microscope to dissect minute structures during surgery is called
neur/o -plasty neuroplasty	8.112 The combining form meaning nerve is Recall that the suffix for surgical repair or reconstruction is The surgical repair of a nerve is called
spondyl/o	8.113 The two combining forms meaning vertebra are <i>vertebr/o</i> and Syndesis is a surgical technique of joining bones together. The medical term for spinal fusion, or surgically joining vertebrae together, is
spondylosyndesis	·

ANSWERS	REVIEW
	8.114 Endovascular, a term formed by the combination of
within	endo- (meaning) with vascul/o (meaning
vessel, pertaining to) and -ar (meaning)
	is one of the words used to name the minimally invasive
	techniques for diagnosis and treatment of disorders within
	blood vessels of the neck, brain, and spinal cord, which are
endovascular neuro	calledsurgery. The synonym
	for endovascular neurosurgery is interventional
radiology	neuro, which is a term that identifies the
	technology used to guide the endovascular catheters to
	the treatment sites. The techniques are considered to be
	minimally invasive, because instruments are guided
skin	percutaneously (through the) into blood vessels, as
	opposed to "open" procedures that cut directly into tissues.



Self-Instruction: Nervous System Therapeutic Terms

, c		
TERM	MEANING	
chemotherapy kem-ō-thār'ă-pē	treatment of malignancies, infections, and other diseases with chemical agents to destroy selected cells or impair their ability to reproduce	
radiation therapy (Fig. 8-22) rā'dē-ā'shŭn thār'ă-pē	treatment of neoplastic disease using ionizing radiation to impede the proliferation of malignant cells	
stereotactic or stereotaxic radiosurgery ster'ē-ō-tak'tik or ster'ē-ō-tak'sik rā'dē-ō-sŭr'jĕr-ē stereotactic or stereotaxic frame (Fig. 8-23) ster'ē-ō-tak'tik or ster'ē-ō-	radiation treatment to inactivate malignant lesions using multiple, precise external radiation beams focused on a target with the aid of a stereotactic frame and imaging such as CT, MRI, or angiography; used to treat inoperable brain tumors and other lesions mechanical device used to localize a point in space, targeting a precise site	
tak'sik frām		
COMMON THERAPEUTIC DRUG CLASSIFICATIONS		
analgesic an-ăl-jē'zik	agent that relieves pain	







Stereotactic frame.

TERM	MEANING
anticonvulsant an'tē-kon-vŭl'sant	agent that prevents or lessens convulsion
hypnotic hip-not'ik	agent that induces sleep

Programmed Review: Nervous System Therapeutic Terms

ANSWERS	REVIEW
	8.115 The combining form referring to chemical agents is <i>chem/o</i> . The treatment of malignancies, infections, and other diseases with
	chemical agents that destroy targeted cells is called
chemotherapy	·
	8.116 Some kinds of cancer are treated with radiation, which deters
radiation	the proliferation of malignant cells. This is called
therapy	·
	8.117 The combining form meaning three-dimensional or solid
stere/o	is, as in the term stereotactic (or stereotaxic) frame,
	which is an apparatus allowing precise localization in space.

ANSWERS	REVIEW
stereotactic radiosurgery	Radiation therapy given with precise localization of the radiation beam using a stereotactic frame is called
without analgesic	8.118 The prefix <i>an-</i> means The Greek word algesis means sensation of pain. A drug that relieves pain is called an
against anticonvulsant	8.119 Many drugs are named according to their action against a condition or symptom. The prefix <i>anti-</i> means A drug that works to prevent or lessen convulsion is called an
hypn/o hypnotic	8.120 The combining forms meaning sleep are <i>somn/i</i> , <i>somn/o</i> , and Formed from the last of these, the term for an agent that induces sleep is



Self-Instruction: Psychiatric Symptomatic Terms

Study the following:

TERM	MEANING
affect af'fekt	emotional feeling or mood
flat affect flat af'fekt	significantly dulled emotional tone or outward reaction
apathy ap'ă-thē	a lack of interest or display of emotion
catatonia kat-ă-tō'nē-ă	a state of unresponsiveness to one's outside environment, usually including muscle rigidity, staring, and inability to communicate
delusion dē-lū'zhŭn	a persistent belief that has no basis in reality
grandiose delusion grăn-dē-ōs' dē-lū'zhŭn	a person's false belief that he or she possesses great wealth, intelligence, or power
persecutory delusion pĕr-se-kyū-tōr'ē dē-lū'zhŭn	a person's false belief that someone is plotting against him or her with the intent to harm
dysphoria dis-fōr'ē-ă	a restless, dissatisfied mood
euphoria yū-fōr'ē-ă	an exaggerated, unfounded feeling of well-being

TERM	MEANING
hallucination ha-lū-si-nā'shŭn	a false perception of the senses for which there is no reality; most commonly hearing or seeing things (<i>alucinor</i> = to wander in mind)
ideation ī-dē-ā'shŭn	the formation of thoughts or ideas, such as suicidal ideation (thoughts of suicide)
mania mā'nē-ă	state of abnormal elation and increased activity
neurosis nū-rō'sis	a psychologic condition in which anxiety is prominent
psychosis sī-kō'sis	a mental condition characterized by distortion of reality resulting in the inability to communicate or function within one's environment
thought disorder thot dis-ōr'dĕr	thought that lacks clear processing or logical direction

Programmed Review: Psychiatric Symptomatic Terms

ANSWERS	REVIEW
affect emotional	8.121 An emotional feeling or mood is called an A flat affect is a significantly dulled tone or
	outward reaction.
	8.122 A lack of interest or display of emotion is termed
apathy	·
cata~	8.123 Recall that the prefix meaning down is, and
ton/o	that the combining term for tone is The original
	Greek term katatonos means stretching down. The medical term
	for a state of unresponsiveness that includes muscle rigidity is
catatonia	·
false	8.124 A delusion is a persistent belief that has no
	basis in reality. A delusion that one has great wealth, intelligence, or
grandiose	power is called a delusion. A delusion that one
	is being persecuted by others plotting against him or her is called a
persecutory delusion	

ANSWERS	REVIEW
carry dysphoria normal euphoria	8.125 The combining form <i>phor/o</i> means to bear or Recall that the prefix <i>dys-</i> means painful, difficult, or faulty. Thus, the term dysphoria originated from terms meaning to carry poorly. The medical term for a restless, dissatisfied mood is Incorporating <i>eu-</i> , the prefix meaning good or, the term for an exaggerated, unfounded feeling of well-being is
hallucination process	8.126 From the Latin word alucinor, meaning to wander in mind, this medical term means a false perception of the senses: Recall that the suffix <i>-ation</i> refers to
ideation	8.127 The process of forming thoughts or ideas is called For example, thoughts of suicide are called suicidal ideation.
condition of mania	8.128 Again, the suffix <i>-ia</i> means A condition of abnormal elation and increased activity is called The original Greek word mania means frenzy.
increase nerve neurosis	8.129 The suffix <i>-osis</i> means condition or The combining form <i>neur/o</i> usually means, or, in this case, nervousness. The term for a psychologic condition in which anxiety is prominent is called, meaning the condition of nervousness.
psych/o psychosis	8.130 The combining forms meaning mind are <i>phren/o</i> , <i>thym/o</i> , and The last of these is used with a suffix that means condition to make the term for a mental condition characterized by a distortion of reality resulting in an inability to function within one's environment:
thought disorder	8.131 A disorder of thinking in which there is no clear processing or logical direction is called a





Self-Instruction: Psychiatric Diagnostic Terms

Study the following:

TERM	MEANING
MOOD DISORDERS	
major depression mā'jor dē-presh'ŭn major depressive illness mā'jor dē-pres'iv il'nes clinical depression klin'i-kl dē-presh'ŭn major affective disorder mā'jor af-fek'tiv dis-ōr'dĕr unipolar disorder yū'ni-pō' lăr dis-ōr'dĕr	a disorder causing periodic disturbances in mood that affect concentration, sleep, activity, appetite, and social behavior; characterized by feelings of worthlessness, fatigue, and loss of interest
dysthymia dis-thī'mē-ă	a milder affective disorder characterized by chronic depression
manic depression man'ik dē-presh'ŭn bipolar disorder (BD) bī-pō'lăr dis-ōr'dĕr	an affective disorder characterized by mood swings of mania and depression (extreme up and down states)
seasonal affective disorder (SAD) sē-zŏn'ăl af-fek'tiv dis-ōr'dĕr	an affective disorder marked by episodes of depression that most often occur during the fall and winter and that remit in the spring

TERM	MEANING
ANXIETY DISORDERS	
generalized anxiety disorder (GAD) jen'ĕr-ă-līzd ang-zī'ĕ-tē dis-ōr'dĕr	the most common anxiety disorder; characterized by chronic, excessive, uncontrollable worry about everyday problems; affects the ability to relax or concentrate, but does not usually interfere with social interactions or employment; physical symptoms include muscle tension, trembling, twitching, fatigue, headaches, nausea, and insomnia
panic disorder pan'ik dis-ōr'dĕr	a disorder of sudden, recurrent attacks of intense feelings, including physical symptoms that mimic a heart attack (rapid heart rate, chest pain, shortness of breath, chills, sweating, and dizziness) with a general sense of loss of control or feeling that death is imminent; often progresses to agoraphobia
phobia fō'bē-ă	exaggerated fear of a specific object or circumstance that causes anxiety and panic; named for the object or circumstance, such as agoraphobia (fear of the marketplace), claustrophobia (fear of confinement), and acrophobia (fear of high places)
posttraumatic stress disorder (PTSD) pōst-traw'măt-ik strĕs dis-ōr'dĕr	a condition resulting from an extremely traumatic experience, injury, or illness that leaves the sufferer with persistent thoughts and memories of the ordeal; may occur after a war, violent personal assault, physical or sexual abuse, serious accident, or natural disaster; symptoms include feelings of fear, detachment, exaggerated startle response, restlessness, nightmares, and avoidance of anything or anyone who triggers the painful recollections
obsessive-compulsive disorder (OCD) ob-ses'iv-kom-pŭl'siv dis-ōr' dĕr	an anxiety disorder featuring unwanted, senseless obsessions accompanied by repeated compulsions; can interfere with all aspects of a person's daily life; for example, the thought that a door is not locked causing repetitive checking to make sure it is locked, or thoughts that one's body has been contaminated causing repetitive washing
hypochondriasis hī'pō-kon-drī'ă-sis	a preoccupation with thoughts of disease and concern that one is suffering from a serious condition that persists despite medical reassurance to the contrary

DISORDERS USUALLY DIAGNOSED IN CHILDHOOD

autism aw'tizm

a developmental disability, commonly appearing during the first three years of life, resulting from a neurologic disorder affecting brain function, as evidenced by difficulties with verbal and nonverbal communication and an inability to relate to anything beyond oneself (*auto* = self) in social interactions; persons with autism often exhibit body movements such as rocking and repetitive hand movements; persons commonly become preoccupied with observing

anorexia nervosa an-ō-rek'sē-ă nĕr-vō'să	a severe disturbance in eating behavior caused by abnormal perceptions about one's body weight, as evidenced by an overwhelming fear of becoming fat that results in a refusal to eat and body weight well below normal
bulimia nervosa bū-lē'mē-ă nĕr-vō'să	an eating disorder characterized by binge eating followed by efforts to limit digestion though induced vomiting, use of laxatives, or excessive exercise

SUBSTANCE ABUSE DISORDERS

substance abuse disorders sŭb'stans ă-byūs' dis-ōr'dĕrz

mental disorders resulting from abuse of substances such as drugs, alcohol, or other toxins, causing personal and social dysfunction; identified by the abused substance, such as alcohol abuse, amphetamine abuse, opioid (narcotic) abuse, and polysubstance abuse

PSYCHOTIC DISORDERS

schizophrenia skiz-ō-frē'nē-ă

a disease of brain chemistry causing a distorted cognitive and emotional perception of one's environment; symptoms include distortions of normal function (such as disorganized thought, delusions, hallucinations, and catatonic behavior), flat affect, apathy, and withdrawal from reality



Programmed Review: Psychiatric Diagnostic Terms

ANSWERS	REVIEW
	8.132 Psychiatrists use a number of terms referring to major
	depression, which is a disorder causing mood disturbances that
	affects concentration, sleep, and activity and is characterized

ANSWERS	REVIEW
clinical affective, disorder	by feelings of worthlessness and apathy. Other terms include major depressive illness, depression, major disorder, and unipolar
manic bipolar one, bipolar	8.133 The disorder in which a person experiences mood swings between depression and mania is called depression or disorder (BD). Note how unipolar refers to mood, whereas refers to two moods.
thym/o faulty dysthymia	8.134 Recall that the three combining forms meaning mind are <i>phren/o</i> , <i>psych/o</i> , and The prefix <i>dys-</i> means painful, difficult, or Another mood disorder,, uses the third combining form and is a milder affective disorder that is characterized by chronic depression.
seasonal affective disorder	8.135 An affective disorder in which episodes of depression occur in seasonal cycles is called (SAD).
generalized anxiety	8.136 There are several anxiety disorders. The most common anxiety disorder occurs generally, not from a specific anxiety-producing situation. It causes excessive and uncontrollable worrying, and it may produce physical symptoms. This disorder is called disorder (GAD).
panic disorder	8.137 Another anxiety disorder produces sudden attacks of intense feelings of anxiety and panic, with often dramatic physical symptoms. This disorder is called
phob/o condition of phobia	8.138 Recall that the combining form that means an exaggerated fear or sensitivity is The suffix -ia means The psychiatric condition in which one experiences an exaggerated fear of something is called a
post-	8.139 After a traumatic experience, a person may develop a stressful condition involving persistent thoughts of the ordeal, fear, and other symptoms. Recall that a common prefix meaning after or behind is This condition

ANSWERS	REVIEW
posttraumatic stress disorder	is termed (PTSD).
obsessive-compulsive disorder	8.140 An obsession is a persistent, uncontrollable thought. A compulsion is a persistent, uncontrollable behavior. An anxiety disorder characterized by obsession and compulsions that often interfere with all aspects of an individual's life is called
presence hypochondriasis	8.141 The combining form <i>chondr/o</i> refers to cartilage of the ribs. The prefix <i>hypo-</i> means deficient or Thus, the term hypochondrium refers to the abdomen (beneath the ribs)— once thought to be the place where sensations of a distressing nature were experienced, such as the concern that one is suffering from a serious condition despite medical reassurance to the contrary. Recall that the suffix <i>-iasis</i> means formation of or the of. The term for the condition when this concern is present is
condition of autism	8.142 The prefix <i>auto</i> - means self. Recall that the suffix <i>-ism</i> means A developmental condition in which the person is unable to relate to anyone other than himself or herself is called
lex/o difficult dyslexia, condition of	8.143 The combining form meaning word or phrase is The prefix <i>dys-</i> means painful, faulty, or The term for the developmental disability of difficulty understanding written words or phrases is The suffix <i>-ia</i> means
attention-deficit hyperactivity disorder excessive	8.144 Typically, ADHD is diagnosed in childhood, when the child has difficulty paying attention to things, is easily distracted, and is generally hyperactive. ADHD is the abbreviation for

ANSWERS	REVIEW
mental retardation	8.145 The Latin word mens refers to the mind, and the Latin verb retardo means to hinder. The condition of limited intelligence is called
without condition of anorexia nervosa	8.146 The Greek word orexis means appetite. Recall that the prefix <i>an-</i> means, and that the suffix <i>-ia</i> means Thus, the term for the condition of being without an appetite is When this condition is caused by a psychological disturbance ("nervous" condition) and fear of being fat, it is called anorexia
bulimia	8.147 An eating disorder characterized by binge eating followed by efforts to limit the digestion of food is called nervosa. Bulimia comes from two Greek words meaning hungry as an ox.
abuse	8.148 Substance abuse disorders are mental disorders resulting from an of substances, such as drugs or alcohol, that leads to dysfunction.
split mind	8.149 The combining form <i>schiz/o</i> means, and the combining form <i>phren/o</i> means Thus, the term for a disease of brain chemistry that causes disorganized thinking, delusions, hallucinations, and other symptoms is
schizophrenia split	Some people mistakenly believe that schizophrenia means a mind that is split in two personalities (multiple personality disorder), but the term actually refers to a mind that is from reality.

Self-Instruction: Psychiatric Therapeutic Terms

Study the following:

TERM	MEANING
electroconvulsive therapy (ECT) ē-lek'trō-kon-vŭl'siv thār'ă-pē	electrical shock applied to the brain to induce convulsions; used to treat patients with severe depression
light therapy līt thār'ă-pē	use of specialized illuminating light boxes and visors to treat seasonal affective disorder

TERM	MEANING			
psychotherapy sī-kō-thār'ă-pē	treatment of psychiatric disorders using verbal and nonverbal interaction with patients, individually or in a group, employing specific actions and techniques			
behavioral therapy bē-hāv'yōr-ăl thār'ă-pē	treatment to decrease or stop unwanted behavior			
cognitive therapy kog'ni-tiv thār'ă-pē	treatment to change unwanted patterns of thinking			
COMMON THERAPEUTIC DRUG CLASSIFICATIONS				
psychotropic drugs sī'kō-trop'ik drŭgz	medications used to treat mental illnesses (<i>trop/o</i> = a turning)			
antianxiety agents an-tī-ang-zī'ĕ-tē ā'jentz anxiolytic agents ang'zē-ō-lit' ik ā' jentz	drugs used to reduce anxiety			
antidepressant an'tē-dē-pres'ănt	agent that counteracts depression			
neuroleptic agents nū-rō-lep'tik ā'jentz	drugs used to treat psychosis, especially schizophrenia			
sedative sed'ă-tiv	agent that has a calming effect and quiets nervousness			

Programmed Review: Psychiatric Therapeutic Terms

ANSWERS	REVIEW
electroconvulsive	8.150 The combining form <i>electr/o</i> refers to electricity. Therapy for patients with severe depression that uses a shock to the brain that induces convulsions is called therapy (ECT).
light	8.151 One theory for the depression of seasonal affective disorder is that the person suffers from reduced amounts of sunlight in the fall and winter. A treatment for this is therefore therapy.
psych/o psychotherapy	8.152 The treatment modality for psychiatric patients using verbal and nonverbal interactions was originally named to mean therapy of the mind. Three combining forms meaning mind are <i>phren/o</i> , <i>thym/o</i> , and Made with the third form, this therapy is termed
behavioral	8.153 Treatment emphasizing behavioral changes is called therapy.

ANSWERS	REVIEW
cognitive	8.154 Treatment directed to change unwanted patterns of thinking is called therapy. The term cognitive refers to thought processes.
psychotropic	8.155 The suffix <i>-tropic</i> pertains to turning. The term for the class of drugs used in treating mental illnesses literally means turning of the mind: drugs.
anti- antianxiety anxiolytic	8.156 Drug classes are frequently named for their actions to cause something or their actions to prevent something. A common prefix meaning against or opposed to is Drugs that work against anxiety, therefore, are termed agents. Another term for these drugs uses the suffix <i>-lytic</i> , pertaining to breaking down something. Thus, the term for these drugs literally means breaking down anxiety: agents.
antidepressant	8.157 A drug that counteracts (works against) depression is called an
neur/o neuroleptic	8.158 The combining form meaning nerve is Drugs used to treat psychosis, especially schizophrenia, are called agents.
sedative	8.159 A patient can be sedated to calm his or her anxious state. A drug that quiets nervousness is called a

CHAPTER 8 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
ALS	amyotrophic lateral sclerosis
ADHD	attention-deficit/hyperactivity disorder
ANS	autonomic nervous system
BD	bipolar disorder
CNS	central nervous system
CP	cerebral palsy
CSF	cerebrospinal fluid
CT	computed tomography
CVA	cerebrovascular accident
DTR	deep tendon reflexes

ABBREVIATION	EXPANSION
ECT	electroconvulsive therapy
EEG	electroencephalogram
GAD	generalized anxiety disorder
HD	Huntington disease
LP	lumbar puncture
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
MS	multiple sclerosis
NCV	nerve conduction velocity
OCD	obsessive-compulsive disorder
PET	positron-emission tomography
PNS	peripheral nervous system
PSG	polysomnography
PTSD	posttraumatic stress disorder
SAD	seasonal affective disorder
SPECT	single-photon emission computed tomography
TIA	transient ischemic attack

CHAPTER 8 SUMMARY OF TERMS

The terms introduced in chapter 8 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

absence seizure/390	anorexia nervosa/414
ab'sens sē'zhŭr	an-ō-rek'sē-ă ner-vō'să
affect/409	antianxiety agents/418
af'fekt	an-tī-ang-zī'e-tē ā' jentz
agnosia/388	anticonvulsant/408
ag-nō'zē-ă	an'tē-kon-vŭl'sant
Alzheimer disease/388	antidepressant/418
awlz'hī-mĕr di-zēz'	an'tē-dē-pres'ănt
amyotrophic lateral sclerosis (ALS)/388	anxiolytic agents/418
ă-mī-ō-trō'fik lat' ĕr-ăl sklĕ-rō'sis	ang'zē-ō-lit'ik ā'jentz
analgesic/407	apathy/409
an-ăl-jē'zik	ap'ă-thē
anencephaly/392	aphasia/384
an' en-sef'ă-lē	ă-fā'zē-ă

ă-stĕr'ē-og-nō'sis

atopognosis/388

ă-top-og-nō'sis

attention-deficit/hyperactivity disorder (ADHD)/414

ă-ten'shŭn-def'i-sit/hī-per-ak-tiv'i-tē dis-ōr'dĕr

autism/413

aw'tizm

autonomic nervous system (ANS)/382

aw-tō-nom'ik nĕr'vŭs sis'tĕm

Babinski reflex/401

bă-bin'skē rē'fleks

Babinski sign/401

bă-bin'skē sīn

behavioral therapy/418

bē-hāv'yōr-al thār'ă-pē

bipolar disorder (BD)/412

bī-pō'lăr dis-ōr'dĕr

brain/378

brān

brainstem/379

brān'stem

bulimia nervosa/414

bū-lē'mē-ă nūr-vō'să

carotid endarterectomy/403

ka-rot'id end'ar-tĕr-ek'tŏ-mē

catatonia/409

kat-ă-tō'nē-ă

central nervous system (CNS)/378

sen'trăl nĕr'vŭs sis'tĕm

cerebellum/379

ser-e-bel'ŭm

cerebral aneurysm/388

ser'ĕ-brăl an'yū-rizm

cerebral angiogram/400

ser'ĕ-brăl an'jē-ō-gram

cerebral arteriosclerosis/388

ser'ĕ-brăl ar-tēr'ē-ō-skler-ō'sis

cerebral atherosclerosis/388

ser'ĕ-brăl ath'er-ō-skler-ō'sis

cerebral cortex/378

ser'ĕ-brăl kōr'teks

cerebral embolism/388

ser'ĕ-brăl em'bo-lizm

cerebral palsy (CP)/388

ser'ĕ-brăl pawl'zē

cerebral thrombosis/388

ser'ĕ-brăl throm-bō'sis

cerebrospinal fluid (CSF)/379

ser'ĕ-brō-spī'năl flū'id

cerebrovascular accident (CVA)/388

ser'ĕ-bro-vas'kyū-lăr ak'si-dent

cerebrovascular disease/388

ser'ĕ-bro-vas'kyū-lăr di-zēz'

cerebrum/378

ser'ĕ-brŭm

chemotherapy/407

kem-ō-thār'ă-pē

clinical depression/412

klin'i-kl dē-presh'ŭn

cognitive therapy/418

kog'ni-tiv thār'ă-pē

coma/385

kō'mă

computed tomography (CT) of the

head/400

kom-pyū'ted tō-mog'ră-fē

convulsion/386

kon-vŭl'shŭn

cranial nerves/381

krā'nē-ăl nĕrvz

craniectomy/404

krā'nē-ek'tō-mē

craniotomy/404

krā-nē-ot'ō-mē

Ri a-ne-oi o-me

deep tendon reflexes (DTR)/400

dēp ten'don rē'fleks-ĕz

delirium/385

dē-lir'ē-ŭm

delusion/409

dē-lū'zhŭn

dementia/385

dē-men'shē-ă

diencephalon/379

dī-en-sef'ă-lon

diskectomy or discectomy/404

disk-ek'tŏ-mē

dvslexia/414

dis-lek'sē-ă

dysphasia/384

dis-fā'zē-ă

dysphoria/409

dis-fōr'ē-ă

dysthymia/412

dis-thī'mē-ă

electroconvulsive therapy (ECT)/417

ē-lek'trō-kon-vŭl'siv thār'ă-pē

electrodiagnostic procedures/397

ē-lek' trō-d ī-ag-nos' tik prō-sē' jŭrz

electroencephalogram (EEG)/397

ē-lek'trō-en-sef'ă-lō-gram

encephalitis/388

en-sef-ă-lī'tis

endovascular neurosurgery/404

en' dō-vas'kyū-lar nūr'ō-sŭr'jĕr-ē

epilepsy/390

ep'i-lep'sē

euphoria/409

yū-fōr'ē-ă

evoked potentials/397

ē-vokt' pō-ten'shălz

extracranial MRA/399

eks' tră-krā' nē-ăl em-ar-ā

fissures/379

fish'ŭrz

flaccid paralysis/386

flak'sid pă-ral'i-sis

flat affect/409

flat af'fekt

frontal lobe/378

frŏn'tă l lōb

generalized anxiety disorder

(GAD)/413

jen'er-ă-līzd ang-zī'e-te dis-or'der

glioma/390

glī-ō'mă

grandiose delusion/409

grăn-dē-ōs' dē-lū'zhŭn

gyri/379

jī'rī

hallucination/410

ha-lū-si-nā'shŭn

hemiparesis/386

hem'ē-pă-rē'sis

hemiplegia/392

hem-ē-plē'jē-ă

herniated disk or disc/390

hĕr'nē-ā-tĕd disk

herpes zoster/390

hĕr'pēz zos'tĕr

Huntington chorea/390

hŭn'ting-tŏn kōr-ē'ă

Huntington disease (HD)/390

hŭn'ting-tŏn di-zēz'

hydrocephalus/390

hī-drō-sĕf'ă-lŭs

hyperesthesia/386

hī'pĕr-es-thē'zē-ă

hypnotic/408

hip-not'ik

hypochondriasis/413

hī'pō-kon-drī'ă-sis

hypothalamus/382

hī'pō-thal'ă-mŭs

ideation/410

ī-dē-ā'shŭn

interventional neuroradiology/404

in' tĕr-ven'shùn-ăl nū'rō-rā-dē-ol'ŏ-jē

intracranial MRA/399

in' tră-krā' nē-ăl em-ar-ā

laminectomy/404

lam'i-nek'tŏ-mē

light therapy/417

līt thār'ă-pē

lumbar puncture (LP)/397

lŭm'bar pŭnk'chūr

magnetic resonance angiography

(MRA)/399

mag-net'ic rez'ō-nănts an-jē-og'ră-fē

magnetic resonance imaging (MRI)/398

mag-net'ic rez'ō-nănts im'ă-jing

myelitis/392 mī-ĕ-lī'tis

myelogram/400 mī'ĕ-lō-gram

narcolepsy/392 nar'kō-lep-sē

neural tube defects/392

nūr'ăl tūb dē'fekts neuralgia/385 nū-ral'jē-ă

neuroleptic agents/418 nū-rō-lep'tik ā'jentz

persecutory delusion/409 pĕr-se-kyū-tōr'ē dē-lū'zhŭn

phobia/413 fō'bē-ă plegia/392 plē'jē-ă

poliomyelitis/392 pō'lē-ō-mī'ĕ-lī'tis polyneuritis/392 pol'ē-nū-rī-tis

polysomnography (PSG)/397 pol'ē-som-nog'ră-fē

positron-emission tomography **(PET)**/399

poz'i-tron-ē-mish'ŭn tō-mog'ră-fē

posttraumatic stress disorder **(PTSD)**/413

pōst-traw'măt-ik strĕs dis-ōr'dĕr

psychosis/410

sī-kō'sis

psychotherapy/418

sī'kō-thār'ă-pē

psychotropic drugs/418

sī'kō-trop'ik drŭgz

quadriplegia/392

kwah'dri-plē'jē-ă

radiation therapy/407

rā'dē-ā'shŭn thār'ă-pē

radiography/400

rā'dē-og'ră-fē

reflex testing/400

rē'fleks test'ing

schizophrenia/414

skiz-ō-frē'nē-ă

sciatica/386

sī-at'i-kă

seasonal affective disorder

(SAD)/412

sē-zŏn'ăl af-fek'tiv dis-ōr'dĕr

sedative/418

sed'ă-tiv

seizure/386

sē'zhŭr

sensory deficit/385

sen'sŏ-rē def'i-sit

sensory nerves/382

sen'sŏ-rē nĕrvz

single-photon emission computed tomography (SPECT) brain

scan/399

sing'gel-fō'ton ē-mĭ'shùn kom-pyūt'ĕd tō-mog'ră-fē brān skan

sleep apnea/392

slēp ap'nē-ă

spastic paralysis/386

spas'tik pă-ral'i-sis

spina bifida/392

spī'nă bĭ'fi-dă

spinal cord/379

spī'năl kōrd

spinal nerves/381

spī'năl nĕrvz

spondylosyndesis/405

spon'di-lō-sin-dē'sis

stereotactic or stereotaxic frame/407

ster'ē-ō-tak'tik or ster'ē-ō-tak'sik frām

stereotactic or stereotaxic radiosurgery/407

ster'ē-ō-tak'tik or ster'ē-ō-tak'sik

rā'dē-ō-sŭr'jĕr-ē

stroke/388

strōk

substance abuse disorders/414

sŭb'stans ă-byūs' dis-ōr'dĕrz

sulci/379

sŭl'sī

sympathetic nervous system/382

sim-pă-thet'ik nĕr'vŭs sis'tĕm

syncope/386

sin'kŏ-pē

tactile stimulation/386

tak'til stim-yū-lā'shŭn

temporal lobe/378

tem'pŏ-răl lōb

thalamus/379

thal'ă-mus

thought disorder/410

thot dis-ōr'dĕr

tonic-clonic seizure/390

ton'ik-klon'ik sē'zhŭr

transcranial Doppler sonogram/401

trans-krā'nē-ăl dop' lĕr son'ō-gram

transient ischemic attack (TIA)/388

tranz'ē-ent is-kē'mik ă-tak'

unipolar disorder/412

yū'ni-pō'lăr dis-ōr'dĕr

ventricles/379

ven'tri-kĕlz

vertebral lamina/404

ver'tĕ-brăl lam'i-nă



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

anencephaly
an / encephal / y
P R S

DEFINITION: without/brain/condition or process of

								 F		
1.	ganglioma									
		/_								
	R									
	DEFINITION:									
	atopognosia									
	1 <i>8</i>			/		/				
	P				R	·_	S			
	DEFINITION:									
	catatonic									
٥.		,		,						
				/						
	P				S					
	DEFINITION:							 	 	
	dystaxia									
		/_		/						
	P									
	DEFINITION:							 	 	
5.	bradykinesia	l								
				/						
	P		R		S					
	DEFINITION:									
6.	meningocele	2								
	CF									
	DEFINITION:									
7.	dysthymia									
		/		/						
	P									
	DEFINITION:									
	DEFINITION:									

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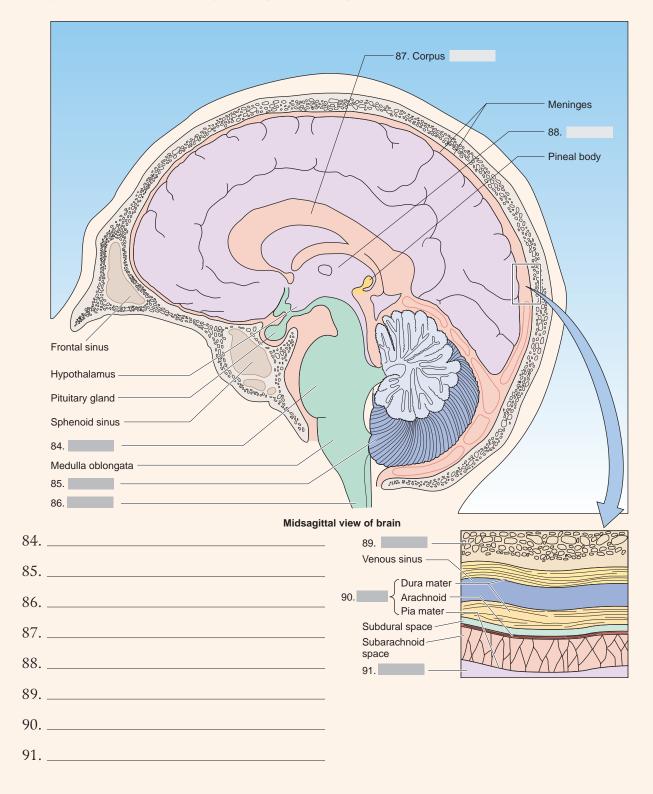
18. acroph			,	
	/		/	
	ΓΙΟΝ:			S
19. hypnor				
	/			
	/			
	ΓΙΟΝ:			
20. euphor				
_	/		/	
DEFINIT	ΓΙΟΝ:			
21. paraso	mnia			
	/		/	
				S
DEFINIT	ΓΙΟΝ:			
22. narcole	1 0			
	/			
	ΓΙΟΝ:			
23. stereot	•			
	/		/	
	EVO.V			S
	ΓΙΟΝ:			
24. hemipa				
	/			
_	ΓΙΟΝ:	_		
25. neuras				
	/			
	ΓΙΟΝ:			
26. myelop				
	/		/	
				S
DEFINIT	ΓΙΟΝ:			
27. intracr	anial			
	/		/	
P		R		S
DEFINIT	ΓΙΟΝ:			

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Write	e the letter of the ma	tching term in	the space provided	d:	
48.	herpes zoster		a. tonic-	clonic	
49.	spinal tap		b. CVA		
50.	faint		c. Alzhe	imer disease	
51.	grand mal		d. PSG		
52.	petit mal		e. flaccio	1	
53.	cerebral thrombus		f. absen	ce	
54.	flabby		g. clot		
55.	stroke		h. LP		
56.	dementia		i. shing	es	
57.	sleep study		j. synco	pe	
Write	e out the expanded to	erm for each ak	breviation:		
58.	CT				
59.	MRI				
60.	PET				
61.	MS				
62.	CNS				
63.	CP				
64.	TIA				
65.	EEG				
66.	DTR				
67.	SPECT				
68.	PSG				
69.	ALS				
70.	PNS				
71.	CSF				
72.	MRA				
73.	CVA				
Circle	e the combining form	that correspor	ds to the meaning	given:	
74.	brain	encephal/o	crani/o	ne	eur/o
75.	movement	esthesi/o	kinesi/o	SC	omat/o
76.	speech	phas/o	plas/o	pl	nag/o
77.	body	somn/o	somat/c	pl	nren/o
78.	spinal cord	vertebr/o	spondyl	/o m	yel/o
79.	mind	cerebr/o	thym/o	th	ialm/o
80.	sensation	esthesi/o	neur/o	ki	nesi/o

81. place	top/o	tax/o	phor/o
82. sleep	somat/o	hypn/o	esthesi/o
83. knowing	phren/o	phas/o	gnos/o

Identify the parts of the brain by writing the missing words in the spaces provided:



Circle the correct spelling:

Circi	e the correct spennig.		
92.	Alsheimer	Alzheimer	Alshiemer
93.	skitzoprenia	skizophrenia	schizophrenia
94.	polysomnography	polysonograpł	ny polysolemography
95.	parenoia	paranoia	paranoyea
96.	quadraplegia	quadriplega	quadriplegia
97.	atopagnosis	atopegnosis	atopognosis
98.	demensha	dementia	dimentia
99.	epilapsey	epilepsey	epilepsy
100.	catonia	catatonia	catetonia
101.	delushion	dilusion	delusion
102.	hellucination	hallucination	hallucinashun
103.	poliomyalitis	poliomyelitis	poleiomyalitis
Give	the noun used to form each	h adjective:	
104.	epileptic		-
105.	euphoric		-
106.	cerebellar		-
107.	delusional		-
108.	syncopal		-
109.	autistic		-
110.	psychotic		-
111.	cerebral		-
112.	paranoid		-
	e the letter of the matching hiatric symptom:	definition in the	e space provided after the name of the
113.	hallucination	a.	an exaggerated, unfounded feeling of well-being
114.	persecutory delusion	b.	dull emotional tone or outward reaction
115.	catatonia	C.	false belief that one is very wealthy, intelligent, or powerful
116.	apathy	d.	false belief that one is being plotted against
117.	euphoria	e.	state of abnormal elation and increased activity
118.	mania	f.	a lack of interest or display of emotion
119.	flat affect	g.	thoughts that lack clear process or logical direction
120.	dysphoria	h.	state of unresponsiveness that includes muscle rigidity, staring, and inability to communicate
121.	thought disorder	i.	restless, dissatisfied mood
122.	grandiose delusion	j.	hearing or seeing things



MEDICAL RECORD ANALYSIS

Medical Record 8-1

OUTPATIENT HISTORY AND PHYSICAL, NEUROLOGIC SERVICES

CC: numbness and tingling in feet and hands

HPI: This 44 y.o. right-handed female c/o numbness in her feet for the past two weeks with "pockets" of numbness in the abdomen. Her legs feel heavy and numb. Her hands started tingling a week ago, and she is feeling very nervous. She has had similar episodes over the past 3 years, lasting about a week at a time, often after stressful events or during hot weather.

PMH: Operations: none. No serious illness/accidents

FH: Father, age 71, L&W; Mother, age 66, is bipolar; her only sibling, a sister, age 28, has cerebral palsy.

SH: Denies smoking or use of street drugs, but drinks socially

OH: certified public accountant. Martial Status: single

ROS: noncontributory

VS: T 98.2°F., P 82, R 16, BP 110/68, Ht 5'2", Wt 138#

PE: HEENT: WNL. Neck: negative. Heart/Lungs: normal.

Cranial nerves intact. Reflexes: DTRs are increased, greater on the left than the right, without spasticity.

Toes upgoing bilaterally.

There is numbness to tactile pin stimulation over both extremities. She has no finger-to-nose ataxia. Her gait is steady.

A: R/O MS

P: Schedule MRI of the brain with and without gadolinium (contrast)

RTO for report and further evaluation x 1 wk

QUESTIONS ABOUT MEDICAL RECORD 8-1

- 1. Which medical term best describes the patient's symptom?
 - a. hyperesthesia
 - b. paresthesia
 - c. ataxia
 - d. hemiparesis
 - e. neuralgia

- 2. What is noted in the history about the patient's mother?
 - a. she is alive and well
 - b. she suffers from depression
 - c. she has mood swings of mania and depression
 - d. she suffers from generalized anxiety
 - e. she is a hypochondriac

- 3. Describe the sister's condition:
 - a. disorder affecting the central nervous system characterized by seizures
 - b. hereditary disease of the central nervous system characterized by bizarre involuntary body movements and progressive dementia
 - c. abnormal accumulation of cerebrospinal fluid in the ventricles of the brain as a result of developmental abnormality
 - d. condition of motor dysfunction caused by damage to the cerebrum during development or injury at birth
 - e. slowly progressive degeneration of nerves in the brain characterized by tremor, rigidity, and slow movements
- 4. Which medical term describes the positive finding of the "toes upgoing" bilaterally?
 - a. Babinski sign
 - b. neuralgia
 - c. hemiparesis
 - d. spastic paralysis
 - e. flaccid paralysis

- 5. What is the doctor's impression?
 - a. the patient has multiple sclerosis
 - b. the patient does not have multiple sclerosis
 - c. the patient may have multiple sclerosis
 - d. the patient may have hardening of the arteries in the brain
 - e. the patient does not have hardening of the arteries in the brain
- 6. Describe the test noted in the Plan:
 - a. x-ray
 - b. nuclear image
 - c. ultrasound scan
 - d. tomographic radiograph
 - e. scan produced by magnetic fields and radiofrequency waves

FOR ADDITIONAL STUDY

Anne Cross has been fairly healthy until she had a stroke about 2 months ago. She was treated by Dr. Paul Jiang, her personal physician, at that time and was discharged from the hospital on medication. At the request of Ms. Cross, Dr. Jiang called for a consultation from a neurologist, Dr. Melvin Classen. Medical Record 8-2 is a consultation report written by Dr. Classen as a letter back to Ms. Cross's physician, Dr. Jiang, after his consultation.

Read Medical Record 8-2 (pages 437-438), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 8-2

homonyr	each where it appears in the record, and define the term below. homonymous hemianopsia						
	inger-to-nose test						
-							
		using medical terminology, brien mitted to the hospital:	fly describe Ms. Cross's symptoms in				
. Complete		marizing the diagnostic tests pe	rformed in April by writing in the				
7	Гest	Definition of Test	Findings				
	СТ						
		sound waves through heart					
carotid	ultrasound						
carotid	ultrasound	Sound waves through heart	slowed electrical pulse on right side				

	Proventil
	Procardia
5.	Dr. Classen recommends two diagnostic studies. Describe both in your own words:
	a
	b
7.	In one sentence, describe Dr. Classen's rationale for recommending the combination of these two tests:
3.	Name the preventive surgical procedure Dr. Classen suggests that may be appropriate if changes are found in the carotid blood vessels:
	Now describe this procedure in your own words:

436 MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE

Medical Record 8-2: For Additional Study

CENTRAL MEDICAL GROUP, INC.

Department of Neurology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

June 9, 20xx

Paul Jiang, M.D. 1409 West Ninth Street Central City, US 90000-1233

Dear Dr. Jiang:

RE: Anne Cross

I had the pleasure of meeting Mrs. Cross today. As you know, she is a 65-year-old right-handed female who began to have difficulties on or about April 17, 20xx. She experienced dizziness that she described as occurring in the midday; there was also some associated slurring of speech. By the next morning, she seemed to have some disorientation with putting on her clothes, and she had some difficulties using the left side of her body. She had no headache or other problems. Prior to that time, she denied having any symptomatology. She was admitted to the hospital, as you are aware, and underwent a series of studies. A CT scan was reviewed and showed evidence of a right ischemic occipital infarct. In addition, she underwent an echocardiogram that was normal and an electroencephalogram that showed some right-sided slowing. A carotid ultrasound study suggested 60-70% stenosis of the bifurcation and/or internal carotids.

The patient was discharged on a combination of Plavix 75 mg daily, and enteric-coated aspirin 81 mg daily for ischemic stroke prophylaxis, Proventil 1 q 12 h p.r.n. for chronic obstructive pulmonary disease, and Procardia XL 1 daily for hypertension. The patient also has stopped smoking.

The patient reports that in the past, she has been essentially well except for some eye surgery. Additionally, after her discharge, she underwent visual field studies which confirmed the presence of an incomplete left-sided homonymous hemianopsia.

By way of family background, her brother died from complications of a stroke at age 78. Her mother died from liver cancer, and her father died from a myocardial infarction.

The patient has no specific allergy to drugs.

The patient's risk factors have been otherwise unremarkable.

On examination today, the patient is a slender female in no acute distress.

Blood pressure from the left arm in a sitting position is 130/95 and from the right arm in the sitting position is 145/95. Her pulse rate is 76 and regular.

No bruits are present over the carotid distributions. The temporal arteries are not enlarged or tender.

On examination of the eyes, the patient showed some mild arteriolar narrowing without hemorrhage or exudate. Gross visual confrontation suggests a neglect of left hemianopsia. The extraocular movements are full. The pupils are symmetrical. There is no ptosis. Facial movements are normal, and speech is normal.

Medical Record 8-2: For Additional Study (Continued)

CENTRAL MEDICAL GROUP, INC.

Department of Neurology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

There is no drift to the outstretched hands. Finger-to-nose test is performed symmetrically.

The patient does not have any asymmetrical topagnosis. She has no evidence of apraxia.

The patient's reflexes are physiologic: they are 2+ at the biceps, triceps, and brachioradialis. The knee and ankle jerks are 2+. No clonus is elicited.

Gait and stance are normal.

OVERALL ASSESSMENT:

Without prior warning, this woman had a new onset of a cerebral infarct. By her description, it is likely that she had a posterior circulatory infarct in the area of the occipital lobe. There may have been an association zone in the parietal area as well. Since that time, she has had some residual hemianopsia as described.

PLAN:

At this time, it is suggested that the most prudent approach would be to do an MRA and an MRI. This should include the great vessels of the neck and the vertebrobasilar system. The MRI would allow us to see the nature of residuals of the stroke, the distribution of the stroke, and would allow us to determine if there are any asymptomatic lesions, including microvascular infarcts which would not be seen on the CAT scan. The MRA would allow us to determine the overall anatomy of the vasculature--including the neck, the bifurcations, and the posterior circulation--in a noninvasive way. Depending on the results of both of these studies, we would have to consider if she needs a full angiogram done with selective views. If, in fact, she has had an infarct of the posterior occipital lobe, then the current treatment with Plavix and aspirin would be adequate. If, by the nature of the MRA, it is determined that there are significant changes or irregularity of the contour of the intima of the vessels at the bifurcations, then there may be an indication for prophylaxis for an endarterectomy despite not having a stroke in that distribution of the vessels. This, of course, would all be determined by the results of this study. The advantage of the MRA-MRI combined would allow us to visualize adequately the vessels combined with the detailed evaluation of her brain.

I think this would be the patient's best and most prudent approach to the patient's health and would help to prevent recurrence of this problem.

Please do not hesitate to call me if there are any questions regarding this patient's evaluation.

Sincerely,

Melvin Classen, M.D. Department of Neurology

(012) 125-6899

MC:mar

DOT:6/10/20xx

cc: Mrs. Anne Cross

ANSWERS TO PRACTICE EXERCISES

- 1. gangli/oma R ganglion (knot)/tumor
- 2. a/topo/gnos/ia P CF R S without/place/ knowing/condition of
- 3. cata/ton/ic P R S down/tone or tension/pertaining to
- 4. dys/tax/ia P R S painful, difficult, or faulty/order or coordination/condition of
- 5. brady/kines/ia R S slow/movement/ condition of
- 6. meningo/cele CF meninges (membrane)/pouching or hernia
- 7. dys/thym/ia P R painful, difficult, or faulty/mind/condition of
- 8. poly/somno/gram **CF** many/sleep/record
- 9. spondylo/syn/desis **CF** Р S vertebra/together or with/binding
- 10. hemi/plegia half/paralysis
- 11. cranio/tomy **CF** skull/incision
- 12. thalam/ic thalamus (a room)/ pertaining to

- 13. neuro/gli/al CF R S nerve/glue/ pertaining to
- 14. dys/lex/ia P R S painful, difficult, or faulty/speech/ condition of
- 15. somni/path/y R S CF sleep/disease/condition or process of
- 16. hydro/cephal/ic CF R water/head/ pertaining to
- 17. necro/mania CF death/condition of abnormal impulse toward
- 18. acro/phob/ia CF R S topmost/exaggerated fear/condition of
- 19. hypno/tic CF S sleep/pertaining to
- 20. eu/phor/ia P R S good or normal/carry or bear/condition of
- 21. para/somn/ia R abnormal/sleep/ condition of
- 22. narco/lepsy CF stupor (sleep)/seizure
- 23. stereo/tax/y CF R S three dimensional or solid/order or coordination/condition or process of

- 24. hemi/paresis half/slight paralysis
- 25. neur/asthenia R nerve/weakness
- 26. myelo/path/y R S CF spinal cord/disease/ condition or process of
- 27. intra/crani/al R S within/skull/pertaining
- 28. a/phas/ia P R S without/speech/ condition of
- 29. schizo/phren/ia CF R split/mind/condition of
- 30. cerebro/spin/al CF R S cerebrum/spine/ pertaining to
- 31. meningitis 32. diskectomy or
- discectomy 33. atopognosis
- 34. Parkinson disease
- 35. Babinski sign or reflex
- 36. paresthesia
- 37. coma
- 38. convulsion
- 39. spina bifida
- 40. astereognosis
- 41. electroencephalogram
- 42. spondylosyndesis
- 43. craniectomy
- 44. cerebral atherosclerosis
- 45. hyperesthesia
- 46. dysphasia
- 47. analgesia
- 48. i
- 49. h
- 50. j
- 51. a

52.		83.	gnos/o	121.	g
53.	g	84.	pons	122.	c
54.			cerebellum	123.	generalized anxiety
55.	b	86.	spinal		disorder
56.	С	87.	callosum	124.	attention-deficit/
57.	d	88.	thalamus		hyperactivity disorder
58.	computed tomography	89.	cranium	125.	obsessive-compulsive
59.	magnetic resonance	90.	meninges		disorder
	imaging	91.	cerebrum	126.	electroconvulsive therapy
60.	positron-emission	92.	Alzheimer		bipolar disorder
	tomography	93.	schizophrenia	128.	posttraumatic stress
61.	multiple sclerosis	94.	polysomnography		disorder
62.	central nervous system	95.	paranoia	129.	c
63.	cerebral palsy	96.	quadriplegia	130.	a
	transient ischemic		atopognosis	131.	f
	attack	98.	dementia	132.	e
65.	electroencephalogram	99.	epilepsy	133.	g
66.	deep tendon reflexes	100.	catatonia	134.	
67.	single-photon emission	101.	delusion	135.	d
	computed tomography	102.	hallucination	136.	neurosis
68.	polysomnography	103.	poliomyelitis	137.	seasonal affective
69.	amyotrophic lateral	104.	epilepsy		disorder
	sclerosis	105.	euphoria	138.	phobia
70.	peripheral nervous	106.	cerebellum	139.	dysthymia
	system	107.	delusion		neuroleptic agents
71.	cerebrospinal fluid	108.	syncope	141.	psychosis
72.	magnetic resonance	109.	autism	142.	generalized anxiety
	angiography	110.	psychosis		disorder (GAD)
73.	cerebrovascular accident	111.	cerebrum	143.	manic depression or
74.	encephal/o	112.	paranoia		bipolar disorder (BD)
75.	kinesi/o	113.	į	144.	panic disorder (PD)
76.	phas/o	114.		145.	psychotropic drugs
77.	somat/o	115.	h	146.	c
78.	myel/o	116.	f	147.	e
	thym/o	117.	a	148.	ь
	esthesi/o	118.	e	149.	d
81.	top/o	119.	ь	150.	a
	hypn/o	120.	i		

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 8-1: Outpatient History and Physical, Neurologic Services

2. c 3. d 4. a 5. c 6. e

Medical Record 8-2: For Additional Study

See CD-ROM for answers.





CHAPTER

9

Endocrine System

✓ Chapter 9 Checklist	LOCATION
☐ Read Chapter 9: Endocrine System and complete all programmed review segments.	pages 441-465
☐ Review the starter set of flash cards and term components related to Chapter 9.	back of book
☐ Complete the Chapter 9 Practice Exercises and Medical Record Analysis 9-1.	pages 470-475
☐ Complete Medical Record Analysis 9-2 For Additional Study.	pages 476-477
☐ Complete the Chapter 9 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 9 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 9 terms.	CD-ROM

ENDOCRINE SYSTEM OVERVIEW

The endocrine system secretes hormones and other substances from ductless glands and other structures (Fig. 9-1). Figure 9-2 describes these functions.



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
aden/o	gland
adren/o, adrenal/o	adrenal gland
andr/o	male
crin/o	to secrete

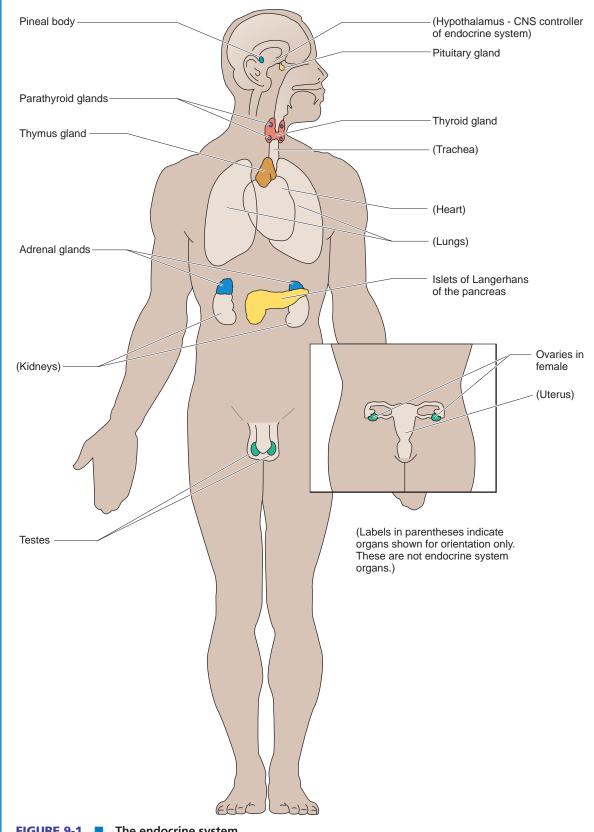


FIGURE 9-1 The endocrine system.

Endocrine gland	Secretions	Function
* Anterior pituitary	Thyroid-stimulating hormone (TSH)	Stimulates secretion from thyroid gland
(adenohypophysis)	Adrenocorticotrophic hormone (ACTH)	Stimulates secretion from adrenal cortex
	Follicle-stimulating hormone (FSH)	Initiates growth of ovarian follicle; stimulates secretion of estrogen in females and sperm production in males
	Luteinizing hormone (LH)	Causes ovulation; stimulates secretion of progesterone by corpus luteum; causes secretion of testosterone in testes
	Melanocyte-stimulating hormone (MSH)	Affects skin pigmentation
	Growth hormone (GH)	Influences growth
	Prolactin (lactogenic hormone)	Stimulates breast development and milk production during pregnancy
* Posterior pituitary (neurohypophysis)	Antidiuretic hormone (ADH)	Influences the absorption of water by kidney tubules
(ilearonypophysis)	Oxytocin	Influences uterine contraction
Pineal body	Melatonin	Exact function unknown; effects onset of puberty
	Serotonin	Serves as a precursor to melatonin
Thyroid gland	Triiodothyronine (T ₃), thyroxine (T ₄)	Regulate metabolism
	Calcitonin	Regulates calcium and phosphorus metabolism
Parathyroid glands	Parathyroid hormone (PTH)	Regulates calcium and phosphorus metabolism
Pancreas (islets of Langerhans)	Insulin, glucagon	Regulates carbohydrate/sugar metabolism
Thymus gland	Thymosin	Regulates immune response
Adrenal glands (suprarenal glands)	Steroid hormones: glucocorticoids, mineral corticosteroids, androgens	Regulate carbohydrate metabolism and salt and water balance; some effect on sexual characteristics.
	Epinephrine, norepinephrine	Affect sympathetic nervous system in stress response
Ovaries	Estrogen, progesterone	Responsible for the development of female secondary sex characteristics and the regulation of reproduction
Testes	Testosterone	Affects masculinization and reproduction

^{*} Release of hormones in pituitary is controlled by hypothalamus

FIGURE 9-2 Functions of the endocrine glands.

Programmed Review: Combining Forms

ANSWERS	REVIEW
aden/o	9.1 The combining form meaning gland is Put this
-oma	together with the suffix referring to a tumor,, to create the
adenoma	term for a tumor of glandular tissue:
adrenal	9.2 The combining forms adren/o and adrenal/o mean
	gland. The prefix <i>ad-</i> used in these combining forms gives a clue that
near	the gland is to, toward, or the kidney. Using adren/o and the
enlargement	suffix -megaly, meaning, the term describing an
adrenomegaly	enlargement of the adrenal gland is Using the
	combining form adrenal/o and the suffix -itis, meaning
inflammation	, the term describing an inflammation of the
adrenalitis	adrenal gland is
andr/o	9.3 The combining form meaning male is Linked to
form	<i>morph/o</i> , the combining form meaning, and -ous, the suffix
pertaining to	meaning, the term pertaining to male form or
andromorphous	appearance is
secrete	9.4 The combining form <i>crin/o</i> means to Recall that
within	the prefix <i>endo-</i> means Thus, the medical term for the
endocrine	system refers to secreting within. The endocrine
	system secretes hormones and other substances from ductless glands.
dips/o	9.5 The combining form meaning thirst is Recall
many	that the prefix <i>poly-</i> means or excessive, and that the
condition of	suffix -ia means a Thus, the term for a
polydipsia	condition of excessive thirst is

ANSWERS	REVIEW
glucos/o production glucogenic hyper- blood glucose or sugar	9.6 The three combining terms for sugar are glyc/o, gluc/o, and Glucose is a form of sugar that is found in the blood and used for energy. The suffix -genic pertains to origin or Combined with gluc/o, the term for something giving rise to or producing glucose is therefore From the combining form glyc/o and the prefix, meaning too much or excessive, and the suffix -emia, referring to a condition, comes the term hyperglycemia, a condition of too much in the blood.
hormon/o adjective	9.7 The combining form for hormone is, from a Greek word meaning "an urging on." (A hormone is a substance that urges an action to occur.) Hormonal is the form.
keton/o ur/o condition of ketonuria	9.8 The two combining forms meaning ketone bodies are <i>ket/o</i> and Ketone bodies are chemical substances resulting from metabolism. Recall that the combining form for urine is, and that the suffix <i>-ia</i> means a Therefore, the term for a condition of ketone bodies in the urine is
pancreat/o -itis pancreatitis pancreatectomy	9.9 The combining form meaning the pancreas is Recall that the suffix for inflammation is The term for inflammation of the pancreas is therefore Excision of the pancreas is termed
thymus thymoma	9.10 The combining form <i>thym/o</i> means the gland. A tumor of thymic tissue is called a
thyr/o, thyroid/o shield pertaining to	9.11 The two combining forms meaning thyroid gland are The Greek term at the origin of these combining forms means <i>shield</i> , and the thyroid gland is so named because it is resembles a The suffix - <i>ic</i> means Combined with <i>tox/o</i> ,
poison thyroid gland thyrotoxic inflammation, thyroid	a combining form meaning, and thyr/o, meaning, the term pertaining to poison of the thyroid gland is Thyroiditis describes an of the gland.

Self-Instruction: Anatomic Terms

Study the following:

GLAND OR HORMONE

adrenal glands ă-drē'năl glanz suprarenal glands sū'pră-rē'năl glanz

> steroid hormones stēr'oyd hōr'mōnz

> > **glucocorticoids** *glū-kō-kōr'ti-koydz*

mineral corticosteroids min'ĕr-ăl kōr'ti-kō-stēr'oydz

androgens an'drō-jenz

catecholamines kat-ĕ-kol'ă-mēnz

epinephrine ep-i-nef'rin adrenaline ă-dren'ă-lin

norepinephrine nōr'ep-i-nef'rin

ovaries

ō'vă-rēz

estrogen es'trō-jen

progesterone prō-jes'tĕr-ōn

islets of Langerhans of the pancreas

ī'lets of lahng'ĕr-hahnz of the pan'krē-as

insulin in'sŭ-lin

glucagon glū'kă-gon

parathyroid glands par-ă-thī'royd glanz

parathyroid hormone (PTH)
par-ă-thī'royd hōr'mōn

LOCATION OR FUNCTION

located on the superior surface of each kidney; the adrenal cortex secretes steroid hormones, and the adrenal medulla secretes epinephrine and norepinephrine

hormones secreted by the adrenal cortex

regulate carbohydrate metabolism and have antiinflammatory effects; cortisol is the most significant glucocorticoid

maintain salt and water balance

influence development and maintenance of male sex characteristics, for example, facial hair, deep voice hormones secreted by the adrenal medulla that affect the sympathetic nervous system in stress response secreted in response to fear or physical injury

secreted in response to hypotension and physical stress

located on both sides of the uterus in the female pelvis; secrete estrogen and progesterone

responsible for the development of female secondary sex characteristics

regulates uterine conditions during pregnancy

endocrine tissue within the pancreas (the organ located behind the stomach, in front of the 1st and 2nd lumbar vertebrae); secretes insulin and glucagon

a hormone secreted by the beta cells of the islets of Langerhans that is responsible for regulating the metabolism of glucose (*insulin* = island)

a hormone secreted by the alpha cells of the islets of Langerhans that serves to regulate carbohydrate metabolism by raising blood sugar

two paired glands located on the posterior aspect of the thyroid gland in the neck; secrete parathyroid hormone regulates calcium and phosphorus metabolism

GLAND OR HORMONE	LOCATION OR FUNCTION
antidiuretic hormone (ADH) an'tē-dī-yū-ret'ik hōr'mōn	influences the absorption of water by kidney tubules
oxytocin ok-sē-tō'sin	influences uterine contraction
testes tes'tēz	located on both sides within the scrotum in the male; secrete testosterone
testosterone tes-tos'tĕ-rōn	affects masculinization and reproduction
thymus gland thī'mŭs gland	located in the mediastinal cavity anterior to and above the heart; secretes thymosin
thymosin thī'mō-sin	regulates immune response
thyroid gland thī'royd gland	located in front of the neck; secretes triiodothyronine (T_3), thyroxine (T_4), and calcitonin
triiodothyronine (T_3) $tr\bar{\imath}$ - $\bar{\imath}$ - $d\bar{o}$ - $th\bar{\imath}$ ' $r\bar{o}$ - $n\bar{e}n$ thyroxine (T_4) $th\bar{\imath}$ - rok ' $s\bar{e}n$	known as the thyroid hormones; regulate metabolism
calcitonin kal-si-tō'nin	regulates calcium and phosphorus metabolism

Programmed Review: Anatomic Terms

ANSWERS	REVIEW
adrenal	9.12 The suprarenal, or, glands are located above
above	the kidneys. The term renal refers to the kidneys, and the prefix <i>supra-</i> means These glands secrete steroid hormones and other hormones.
corticoids steroids male	9.13 Steroid hormones have several functions, including an effect on sex characteristics. They include gluco and mineral cortico Androgens are steroids that stimulate the development of sex characteristics.
suprarenal norepinephrine nervous	9.14 Also secreted by the adrenal, or, glands are epinephrine and, which are hormones that affect the system in a stress response of the body. For example, epinephrine, also called adrenaline, stimulates the heart and breathing rates.

ANSWERS	REVIEW
endocrine secrete progesterone female	9.15 The ovaries in women are both reproductive and organs, because they produce eggs for reproduction and also hormones. The hormones secreted by the two ovaries are estrogen and, which stimulate the development of sex characteristics and help to regulate reproduction.
pancreas glucagon gluc/o	9.16 The islets of Langerhans are groups of cells in the, an organ that is located behind the stomach. The pancreas secretes insulin and, which help to regulate carbohydrate and sugar metabolism. The condition diabetes mellitus involves abnormal utilization of insulin. The term glucagon is made from the combining form for sugar:
alongside of parathyroid parathyroid	9.17 Recall that the prefix <i>para-</i> means
pineal serotonin melatonin	9.18 Located in the center of the brain is the gland, which secretes the neurotransmitter Also secreted by the pineal is the substance The exact function of melatonin is unknown, but it affects the onset of puberty.
hypophysis below anterior posterior	9.19 The pituitary gland, located at the base of the brain, secretes a long list of hormones. It is also called the, a term using the prefix <i>hypo-</i> , meaning (or deficient), because it hangs below the hypothalamus part of the brain. The front subdivision of the pituitary gland is called the pituitary, or the adenohypophysis. The rear subdivision is called the pituitary, or the neurohypophysis.
thyroid corticotropic follicle hormone	9.20 The anterior pituitary secretes seven hormones that are often identified by their abbreviations. TSH isstimulating hormone. ACTH is adreno hormone. FSH isstimulating hormone. LH is luteinizing

ANSWERS	REVIEW
growth stimulating before, prolactin	9.21 Also secreted by the anterior pituitary are hormone (GH) and melanocyte hormone (MSH). The hormone that stimulates breast development and milk during pregnancy (from the combining form <i>lact/o</i> meaning milk and the prefix <i>pro-</i> meaning) is called
neurohypophysis antidiuretic promotes	9.22 The posterior pituitary, also called the, secretes two hormones. ADH, or hormone, influences the absorption of water in the kidney. (Note that diuretic drugs stimulate the body to excrete water; thus, the term antidiuretic would involve an action that the retention of water).
oxytocin	9.23 The other hormone secreted by the posterior pituitary is, which stimulates uterine contractions during labor (childbirth).
testes testosterone testis	9.24 In males, located within the scrotum are the
thymus	9.25 Located in the mediastinal cavity above and anterior to the heart is the gland. This gland secretes thymosin, which regulates the immune response.
thyroid thyroxine calcitonin	9.26 From the combining form <i>thyr/o</i> , the gland is located in front of the neck and secretes three hormones. Triiodothyronine (T ₃) and (T ₄) regulate metabolism. The third hormone, called, regulates calcium metabolism and is from the same combining form as calcium.

Self-Instruction: Symptomatic Terms

Study the following:

TERM	MEANING
exophthalmos or exophthalmus (see Fig. 9-6, B) ek-sof-thal'mos or ek-sof-thal'mŭs	protrusion of one or both eyeballs, often because of thyroid dysfunction or a tumor behind the eyeball
glucosuria glū-kō-syū'rē-ă glycosuria glī'kō-sū'rē-ă	glucose (sugar) in the urine

TERM	MEANING
hirsutism hĭr'sū-tizm	shaggy; an excessive growth of hair, especially in unusual places (e.g., a woman with a beard)
hypercalcemia hī'pĕr-kal-sē'mē-ă	an abnormally high level of calcium in the blood
hypocalcemia hī'pō-kal-sē'mē-ă	an abnormally low level of calcium in the blood
hyperglycemia hī'pĕr-glī-sē'mē-ă	high blood sugar
hypoglycemia hī'pō-glī-sē'mē-ă	low blood sugar
hyperkalemia hī'pĕr-kă-lē'mē-ă	an abnormally high level of potassium in the blood (kalium = potassium)
hypokalemia hī'pō-kă-lē'mē-ă	deficient level of potassium in the blood
hypersecretion hī'pĕr-se-krē'shŭn	abnormally increased secretion
hyposecretion hī'pō-se-krē'shĭin	abnormally decreased secretion
ketosis kē-tō'sis ketoacidosis kē'tō-as-i-dō'sis diabetic ketoacidosis (DKA) dī-ă-bĕt' ĭk kē'tō-as-ĭ-dō'sĭs	presence of an abnormal amount of ketone bodies (acetone, beta-hydroxybutyric acid, and acetoacetic acid) in the blood and urine indicating an abnormal use of carbohydrates, such as in uncontrolled diabetes and starvation (<i>keto</i> = alter)
metabolism mĕ-tab'ō-lizm	all chemical processes in the body that result in growth, generation of energy, elimination of waste, and other body functions
polydipsia pol-ē-dip'sē-ă	excessive thirst
polyuria pol-ē-yū'rē-ă	excessive urination



Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
away	9.27 One of the combining forms for eye is <i>ophthalm/o</i> . Recall that the prefix <i>ex</i> - means or out. The term
v	for the condition in which one or both eyeballs protrude,
	usually because of a thyroid dysfunction, is
exophthalmos or exophthalmus	·

ANSWERS	REVIEW
hypoglycemia hyperglycemia	9.35 An abnormally low level of blood sugar is called, whereas an abnormally high blood sugar level is called
hypokalemia hyperkalemia	9.36 From the Latin root <i>kalium</i> for potassium, the term for an abnormally low level of potassium in the blood is, whereas an abnormally high level of potassium in the blood is
increase ketosis keto ketoacidosis	9.37 The suffix <i>-osis</i> means condition or The condition of an increased presence of ketone bodies is called, oracidosis. The abbreviation DKA refers to diabetic



Self-Instruction: Diagnostic Terms

Study the following:

TERM	MEANING
ADRENAL GLANDS	
Cushing syndrome (Fig. 9-3) kush'ing sin'drōm	a collection of signs and symptoms caused by an excessive level of cortisol hormone; may be due to excessive production by the adrenal gland (often because of a tumor), or, more commonly, occurs as a side effect of treatment with glucocorticoid (steroid) hormones, such as prednisone for asthma, rheumatoid arthritis, lupus, or other inflammatory diseases; symptoms include upper body obesity, facial puffiness (moon-shaped appearance), hyperglycemia, weakness, thin and easily bruised skin with stria (stretch marks), hypertension, and osteoporosis



FIGURE 9-3 Cushing syndrome. A patient with the characteristic upper body obesity and facial puffiness with a moon-shaped appearance is shown.

TERM	MEANING
adrenal virilism ă-drē'năl vir'i-lizm	excessive output of the adrenal secretion of androgen (male sex hormone) in adult women caused by a tumor or hyperplasia; evidenced by amenorrhea (absence of menstruation), acne, hirsutism, and deepening of the voice (virilis = masculine)
PANCREAS	
diabetes mellitus (DM)	metabolic disorder caused by the absence or insufficient

dī-ă-bē'tēz mel'i-tŭs

type 1 diabetes mellitus tīp 1 dī-ă-bē'tēz mel'i-tŭs

type 2 diabetes mellitus tīp 2 dī-ă-bē'tēz mel'i-tŭs

hyperinsulinism

hī'pĕr-in'sū-lin-izm

pancreatitis pan'krē-ă-tī'tis

production of insulin secreted by the pancreas, resulting in hyperglycemia and glucosuria (diabetes = passing through; mellitus = sugar)

diabetes in which no beta-cell production of insulin occurs and the patient is dependent on insulin for survival diabetes in which either the body produces insufficient insulin or insulin resistance (a defective use of the insulin that is produced) occurs; the patient usually is not dependent on insulin for survival

a condition resulting from an excessive amount of insulin in the blood that draws sugar out of the bloodstream, resulting in hypoglycemia, fainting, and convulsions; often caused by an overdose of insulin or by a tumor of the pancreas

inflammation of the pancreas

PARATHYROID GLANDS

hyperparathyroidism

hī'pĕr-par-ă-thī'royd-izm

hypoparathyroidism hī'pō-par-ă-thī'royd-izm hypersecretion of the parathyroid glands, usually caused by

hyposecretion of the parathyroid glands

PITUITARY GLAND (HYPOPHYSIS)

acromegaly (Fig. 9-4) ak-rō-meg'ă-lē

disease characterized by enlarged features, especially of the face and hands, caused by hypersecretion of the pituitary growth hormone after puberty, when normal bone growth has stopped; most often caused by a pituitary tumor

pituitary dwarfism (Fig. 9-5) pi-tū'i-tār-ē dwōrf'izm

a condition of congenital hyposecretion of growth hormone that slows growth and causes short, yet proportionate, stature (not affecting intelligence); often treated during childhood with growth hormone; other forms of dwarfism are most often caused by genetic defects

pituitary gigantism pi-tū'i-tār-ē jī'gan-tizm

a condition of hypersecretion of growth hormone during childhood bone development that leads to an abnormal overgrowth of bone, especially of the long bones; most often caused by a pituitary tumor

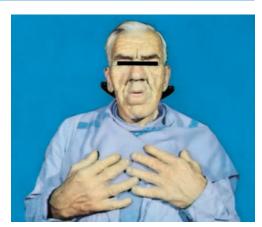


FIGURE 9-4 Enlarged hands and facial features in patient with acromegaly.



FIGURE 9-5 Normal male (extreme right) and three types of dwarfism. On the extreme left is a child who has failed to grow because of congenital absence of the thyroid gland (cretinism). The next pair of dwarfs have entirely normal proportions but are half-normal in size (pituitary dwarfism). The next pair to the right show disproportionately short extremities but normal-sized trunk and head (disproportionate dwarfism because of gene defect).

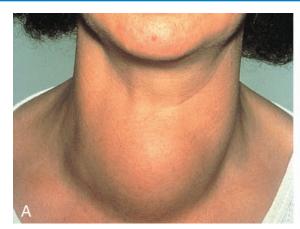




FIGURE 9-6 Hyperthyroidism. A. Patient with goiter. B. Patient with exophthalmos.

TERM	MEANING
THYROID GLAND	
goiter (Fig. 9-6) goy'tĕr	enlargement of the thyroid gland caused by thyroid dysfunction, tumor, lack of iodine in the diet, or inflammation (<i>goiter</i> = throat)
hyperthyroidism (see Fig. 9-6) hī-pĕr-thī'royd-izm	a condition of hypersecretion of the thyroid gland characterized by nervousness, weight loss, rapid pulse, protrusion of the eyeball (exophthalmos), goiter, etc.; see Comparison of Symptoms in table on page 457
Graves disease grāvz diz'ēz	the most common form of hyperthyroidism; caused by an autoimmune defect that creates antibodies that stimulate the overproduction of thyroid hormones; exophthalmos is a featured characteristic
hypothyroidism hī'pō-thī'royd-izm	a condition of hyposecretion of the thyroid gland causing low thyroid levels in the blood that result in sluggishness, slow pulse, and, often, obesity; see Comparison of Symptoms in table on page 457
myxedema mik-sĕ-dē'mă	advanced hypothyroidism in adults characterized by sluggishness, slow pulse, puffiness in the hands and face, and dry skin (<i>myx</i> = mucus)
cretinism (see Fig. 9-5) krē'tin-izm	condition of congenital hypothyroidism in children that results in a lack of mental development and dwarfed physical stature; the thyroid gland is either congenitally absent or imperfectly developed

COMPARISON OF SYMPTOMS: HYPERTHYROIDISM VERSUS HYPOTHYROIDISM	
HYPERTHYROIDISM	HYPOTHYROIDISM
Restless, nervous, irritable, fine tremor, insomnia	Lethargic, poor memory, slow, expressionless
Fine, silky hair with hair loss	Dry, brittle hair with hair loss
Warm, moist skin	Pale, cold, dry, and scaling skin
Increased perspiration	Decreased perspiration
Fast heart rate (tachycardia)	Slow heart rate (bradycardia)
Weight loss	Weight gain
Protrusion of the eyeball (exophthalmos)	Edema of the face and eyelids
Absence of menses (amenorrhea)	Heavy menses (menorrhagia)
Diffuse goiter	Thick tongue, slow speech

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
inflammation	9.38 Recall that the suffix <i>-itis</i> means
pancreatitis	Inflammation of the pancreas is called
high sugar diabetes mellitus 1, no insulin 2 resistance	9.39 Most endocrine problems involve excessive or deficient secretion of hormones or the body's use of those hormones. The condition caused by the absence or insufficient production of insulin secreted by the pancreas resulting in hyperglycemia (blood sugar) and glycosuria (in the urine) is called (DM). Patients with type diabetes mellitus produce insulin and thereby are dependent on for survival. Patients with type diabetes mellitus produce insulin, but not enough, or have insulin
	(a defective use of the insulin that is produced).
hyper-	9.40 Recall that the prefix for excessive is,
condition	and that the suffix -ism refers to a
of	The condition of having excessive insulin is called
hyperinsulinism	This condition results in low
hypoglycemia	blood sugar, which is called

ANSWERS	REVIEW
	9.41 The terms for diagnostic conditions are formed from the combining form for the gland's name with the prefixes for deficient or excessive, referring to the gland's secretion. The condition of hyposecretion of the
hypoparathyroidism	parathyroid glands is called, and hypersecretion of these glands is called
hyperparathyroidism	
hypothyroidism hyperthyroidism Graves exophthalmos or exophthalmus	9.42 Similarly, hyposecretion of the thyroid gland is called, and hypersecretion of the thyroid gland is called The most common form of hyperthyroidism is called disease. A featured characteristic of Graves disease is the protrusion of the eyeballs, known as
cretinism	9.43 Congenital hypothyroidism in children, characterized by reduced stature and poor mental development, is called
myxedema	9.44 The term edema refers to a swollen body area caused by fluid retention. This root is used in the term for a form of advanced hypothyroidism in adults that involves swollen hands and face along with other symptoms:
goiter	9.45 The Latin word guttur means throat. The condition of an enlarged thyroid gland caused by thyroid dysfunction, tumor, or other causes, and characterized by the appearance of a swollen throat is
Cushing	9.46 Cortisol is a glucocorticoid hormone that is secreted by the adrenal gland. Excessive levels of cortisol, either caused by tumor or as a side effect of treatment with steroid hormones, result in a collection of signs and symptoms known as syndrome.
andr/o, androgen	9.47 The adrenal glands also secrete a male sex hormone that is named using the combining form for male: This hormone is called

ANSWERS	REVIEW
	Hypersecretion of androgen in adult women causes a
	condition that is named, in part, from the Latin word for
adrenal	masculine (virilis). This condition is called
virilism	·
	9.48 Recall that the pituitary gland produces a number
	of hormones, including growth hormone. The condition
	of congenital hyposecretion of growth hormone, marked
	by small, but proportionate, stature, is called pituitary
dwarfism	
	9.49 The combining form <i>acr/o</i> refers to the extremities.
	Recall that the suffix -megaly means
enlargement	The condition characterized by
	enlarged hands and face resulting from pituitary
	hypersecretion of growth hormone after puberty,
	when normal bone growth has stopped, is termed
acromegaly	The condition of hypersecretion of
	pituitary growth hormone during childhood bone
	development that leads to an abnormal overgrowth of
pituitary	bone, especially of the long bones, is called
gigantism	Acromegaly occurs in adulthood, and
childhood	gigantism occurs in Each is a result
hyper	ofsecretion of pituitary growth hormone, most
tumor	often caused by a



Self-Instruction: Diagnostic Tests and Procedures

Study the following:

TEST OR PROCEDURE	EXPLANATION
LABORATORY TESTING	
blood sugar (BS) blŭd shu-găr blood glucose blŭd glū'kōs	measurement of the level of sugar (glucose) in the blood
fasting blood sugar (FBS) fast-ing blŭd shu-găr	measurement of blood sugar level after fasting (not eating) for 12 hours

TEST OR PROCEDURE	EXPLANATION
postprandial blood sugar (PPBS) pōst-pran'dē-ăl blŭd shu-găr	measurement of blood sugar level after a meal (commonly 2 hours later)
glucose tolerance test (GTT) glū'kōs tol'ĕr-ănts test	measurement of the body's ability to metabolize carbohydrates by administering a prescribed amount of glucose after a fasting period, then measuring blood and urine for glucose levels every hour thereafter for 4 to 6 hours
glycohemoglobin glī'kō-hē-mō-glō'bin glycosylated hemoglobin (HbAlc) glī'kō-si-lāt-ĕd hē-mō-glō'bin	a molecule (fraction) in hemoglobin, the level of which rises in the blood as a result of an increased level of blood sugar; a common blood test used in diagnosing and treating diabetes
electrolyte panel ē-lek'trō-līt păn'l	measurement of the level of specific ions (sodium, potassium, and chloride) along with carbon dioxide (CO ₂) (for indirect measure of bicarbonate ion) in the blood; electrolytes are essential for maintaining water balance (hydration) as well as nerve, muscle, and heart activity
thyroid function study thi'royd fŭnk'shŭn stŭd'ē	measurement of thyroid hormone levels in blood plasma to determine the efficiency of glandular secretions, including T ₃ , T ₄ , and TSH
urine sugar and ketone studies yūr'in shu-gar and kē'tōn stǔd'ēz	chemical tests to determine the presence of sugar or ketone bodies in urine; used as a screen for diabetes (Note: production of a urine specimen for these tests requires one to urinate or void [empty the bladder])

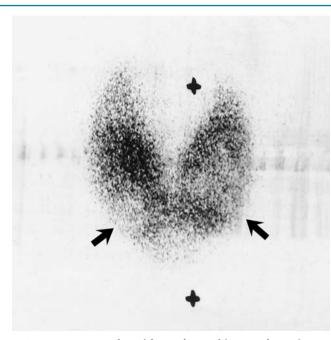


FIGURE 9-7 Thyroid uptake and image detecting the presence of multiple nodules *(arrows)*.

Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
glucose	9.50 Several laboratory tests are used to diagnose problems in the endocrine system. Because diabetes is a serious and common disorder, blood sugar levels are particularly important for diagnostic purposes. Measurement of the level of sugar (glucose) in the blood is simply called a blood sugar (BS), or blood
fasting blood sugar	9.51 A measurement of the blood sugar level after a 12-hour fast is called a (FBS).
post- postprandial blood sugar	9.52 The prefix meaning after or behind is The Latin word prandium means a meal. The medical adjective formed from these two parts is used when referring to a blood sugar test performed approximately 2 hours after a meal: (PPBS).
glucose tolerance test	9.53 A more complex blood sugar test measures the body's ability to metabolize carbohydrates. Glucose is administered after a fasting period, and blood and urine glucose levels are measured hourly thereafter to determine how well the body tolerates this glucose. This is called a (GTT).
glycohemoglobin HbAlc	9.54 Another type of blood sugar test that examines the effect of blood sugar on hemoglobin is called a test. This test is also known as a glycosylated hemoglobin () test.

ANSWERS	REVIEW
electrolyte	9.55 The Greek word lytos means soluble (as in any substance that dissolves in water or blood). Some ions conduct electricity when they are dissolved. These substances are called electrolytes. Proper electrolyte levels are essential for balanced body function. Measurement of the level of specific ions, such as sodium and potassium, are part of an panel.
thyroid function	9.56 The laboratory study that measures thyroid hormone levels in the blood to determine how well the thyroid is functioning is called a study.
urine sugar, ketone void	9.57 Chemical measurements of sugar and ketones in the urine, which are used as a screen for diabetes, are called and studies. Production of a urine specimen for these tests requires one to urinate or (empty the bladder).
computed tomography	9.58 In addition to these laboratory tests, several imaging procedures are used to diagnose endocrine disorders. The type of x-ray imaging using a computer to create a transverse view, such as of the pituitary gland, is called (CT).
magnetic resonance imaging	9.59 Nonionizing images using (MRI) may be used to identify abnormalities in several glands.
son/o recording sonography	9.60 Recall that the combining form meaning sound is The suffix <i>-graphy</i> refers to the process of The imaging modality using very high sound frequencies to record images of the endocrine glands is called
thyroid uptake image	9.61 A test of the thyroid involves injection of radioactive isotopes that are taken up in the thyroid, leading to production of a nuclear image. This is called a and



Self-Instruction: Operative Terms

Study the following:

TERM	MEANING
adrenalectomy ă-drē-năl-ek'tŏ-mē	excision of the adrenal glands
hypophysectomy hī'pof-i-sek'tŏ-mē	excision of the pituitary gland
pancreatectomy pan'krē-ă-tek'tŏ-mē	excision of the pancreas
parathyroidectomy pa'ră-thī-roy-dek'tŏ-mē	excision of the parathyroid glands
thymectomy thī-mek'tŏ-mē	excision of the thymus gland
thyroidectomy thī-roy-dek'tŏ-mē	excision of the thyroid gland



Programmed Review: Operative Terms

ANSWERS	REVIEW	
excision adrenalectomy	9.62 Recall that the suffix <i>-ectomy</i> means The excision of the adrenal gland is called an	
pancreatectomy	9.63 The excision of the pancreas is called a	
thyroidectomy	9.64 The excision of the thyroid gland is called a	
parathyroid	9.65 A parathyroidectomy is the excision of the gland	
thymectomy	9.66 The excision of the thymus gland is called a	
hypophysis hypophysectomy	9.67 Recall that the pituitary gland is also called the That combining form is used in the term for excision of the pituitary gland:	



Self-Instruction: Therapeutic Terms

Study the following:

TERM	MEANING
continuous subcutaneous insulin infusion (CSII) (Fig. 9-8) kon-tin'yū-ŭs sŭb-kyū-tā'nē-ŭs in'sŭ-lin in-fyū'zhŭn insulin pump therapy in'sŭ-lin pŭmp thār'ă-pē	use of an insulin delivery device that is worn on the body (usually the abdomen) and subcutaneously infuses doses of insulin programmed according to the individual needs of the diabetic patient
radioiodine therapy rā'dē-ō-ī'ō-dīn thār'ă-pē	use of radioactive iodine to treat disease, such as to eradicate thyroid tumor cells; treatment is administered in a nuclear medicine facility
COMMON THERAPEUTIC DRUG CLASSIFICATIONS	
antidiabetic drug an-tē-dī-ă-bet'ik drŭg	any of several agents used to control blood sugar levels in treatment of diabetes mellitus
antithyroid drug an-tē-thī'royd drŭg	an agent that blocks the production of thyroid hormones; used to treat hyperthyroidism

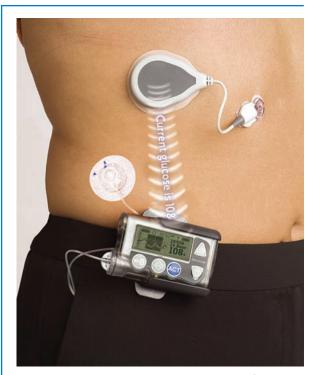


FIGURE 9-8 Abdominal placement of an insulin pump (continuous subcutaneous insulin infusion).

TERM	MEANING
hormone replacement therapy (HRT) hōr'mōn rē-plās'ment thār'ă-pē	treatment with a hormone to correct a hormonal deficiency (e.g., estrogen, testosterone, and thyroid)
hypoglycemic hī'pō-glī-sē'mik antihyperglycemic an'tē-hī'per-glī-sē'mik	a drug that lowers the blood glucose level (e.g., insulin)



Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
continuous subcutaneous insulin infusion 1 diabetes mellitus	9.68 An insulin pump is a device that subcutaneously infuses programmed doses of insulin through the skin. This therapy, which is called (CSII), is used in the treatment of type (DM).
radioiodine nuclear	9.69 Because the thyroid gland absorbs iodine, radioactive iodine that is administered into the body becomes localized in the thyroid, where it can kill thyroid tumor cells. This is called therapy, and it is administered in a medicine facility.
anti- antidiabetic -emia hyperglycemia antihyperglycemic hypoglycemic	9.70 Drug classifications are often named by their action against some process or condition in the body. The prefix meaning against is Any agent that works against the ill effects of diabetes mellitus by controlling blood sugar levels in called an drug. The suffix for a blood condition is Recall that the condition of high blood sugar is called A drug that works against this condition by lowering the blood glucose level is an drug. Another term for this is a drug.
antithyroid	9.71 An agent that blocks the production of thyroid hormones is called an drug.
hormone replacement therapy	9.72 A patient with a deficiency of a particular hormone may be treated by administration of that hormone to replace what is missing. This treatment is referred to as (HRT).

CHAPTER 9 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
ACTH	adrenocorticotropic hormone
ADH	antidiuretic hormone
BS	blood sugar
CO_2	carbon dioxide
CSII	continuous subcutaneous insulin infusion
СТ	computed tomography
DKA	diabetic ketoacidosis
DM	diabetes mellitus
FBS	fasting blood sugar
FSH	follicle-stimulating hormone
GH	growth hormone
GTT	glucose tolerance test
HbAlc	glycosylated hemoglobin
HRT	hormone replacement therapy
LH	luteinizing hormone
MRI	magnetic resonance imaging
MSH	melanocyte-stimulating hormone
PPBS	postprandial blood sugar
PTH	parathyroid hormone
T_3	triiodothyronine
$T_{\scriptscriptstyle{4}}$	thyroxine
TSH	thyroid-stimulating hormone

CHAPTER 9 SUMMARY OF TERMS

The terms introduced in chapter 9 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acromegaly/454	adrenalectomy/463
ak-rō-meg'ă-lē	ă-drē-năl-ek'tŏ-mē
adenohypophysis/447	adrenaline/446
ad'ĕ-nō-hī-pof'i-sis	ă-dren'ă-lin
adrenal glands/446 ă-drē'năl glanz adrenal virilism/454 ă-drē'năl vir'i-lizm	adrenocorticotropic hormone (ACTH)/447 ă-drē'nō-kōr'ti-kō-trō'pik hōr'mōn androgens/446 an'drō-jenz

anterior pituitary/447

an-tēr'ē-ōr pi-tū'i-tār-ē

antidiabetic drug/464

an-tē-dī-ă-bet'ik drŭg

antidiuretic hormone (ADH)/448

an'tē-dī-yū-ret'ik hōr'mōn

antihyperglycemic/465 an'tē-hī'per-glī-sē'mik

antithyroid drug/464 an-tē-thī'royd drùg

blood glucose/459

blud glu'kos

blood sugar (BS)/459

blud shu-går

calcitonin/448 kal-si-tō'nin

catecholamines/446

kat-ĕ-kol'ă-mēnz

computed tomography **(CT)**/461

kom-pyū'tĕd tō-mog'ră-fē

continuous subcutaneous insulin infusion (CSII)/464

kon-tin'yū-ŭs sŭb-kyū-tā'nē-ŭs in'sŭ-lin in-fyū'zhŭn

cretinism/456 krē'tin-izm

Cushing syndrome/453

kush'ing sin'drōm

diabetes mellitus (DM)/454

dī-ă-bē'tēz mel'i-tŭs

diabetic ketoacidosis (DKA)/451

di-ă-bĕt'ik kē'tō-as-ĭ-dō'sis

electrolyte panel/460

ē-lek'trō-līt păn' l

epinephrine/446 ep-i-nef'rin

estrogen/446 es'trō-jen

exophthalmos or exophthalmus/450

ek-sof-thal'mos or ek-sof-thal'mŭs

fasting blood sugar (FBS)/459

fast-ing blŭd shu-găr

follicle-stimulating hormone

(FSH)/447

fol'i-kĕl-stim-yū'lā-ting hōr'mōn

glucagons/446 glū'kă-gon

glucocorticoids/446 glū' kō-kōr'ti-koydz

glucose tolerance test (GTT)/460

glū'kōs tol'ĕr-ănts test

glucosuria/450 glū'kō-syū'rē-ă

glycohemoglobin/460 glī'kō-hē-mō-glō'bin

glycosuria/450 glī-kō-sū'rē-ă

glycosylated hemoglobin (HbAlc)/460

glī'kō-si-lāt-ĕd hē-mō-glō'bin

goiter/456 goy'tĕr

Graves disease/456

grāvz di-zēz'

growth hormone (GH)/447

grōth hōr'mōn hirsutism/450 hĭr'sū-tizm

hormone replacement therapy

(HRT)/465

hōr'mōn rē-plās'ment thār'ă-pē

hypercalcemia/450 hī'pĕr-kal-sē'mē-ă hyperglycemia/450 hī'pĕr-glī-sē'mē-ă

hyperinsulinism/454 hī'pĕr-in'sū-lin-izm

hyperkalemia/450 hī'pĕr-kă-lē'mē-ă

hyperparathyroidism/454 hī'pĕr-par-ă-thī'royd-izm

hypersecretion/450 hī'pĕr-se-krē'shŭn

hyperthyroidism/456 hī-pĕr-thī'royd-izm

hypocalcemia/450 hī'pō-kal-sē'mē-ă

hypoglycemia/450

hī'pō-glī-sē'mē-ă

hypoglycemic/465

hī'pō-glī-sē'mik

hypokalemia/450

hī'pō-kă-lē'mē-ă

hypoparathyroidism/454

hī'pō-par-ă-thī'royd-izm

hypophysectomy/463

hī'pof-i-sek'tŏ-mē

hypophysis/447

hī-pof'i-sis

hyposecretion/451

hī' pō-se-krē' shŭn

hypothyroidism/456

hī'pō-thī'royd-izm

insulin/446

in'sŭ-lin

insulin pump therapy/464

in'sŭ-lin pump thār'ă-pē

islets of Langerhans of the

pancreas/446

ī'lets of lahng'ĕr-hahnz of the pan'krē-as

ketoacidosis/451

kē'tō-as-i-dō'sis

ketosis/451

kē-tō'sis

lactogenic hormone/447

lak-tō-jen'ik hōr'mōn

luteinizing hormone (LH)/447

lū-tē-nī'zing hōr'mōn

magnetic resonance imaging

(MRI)/461

măg-net'ik rez'ō-nănts im'ă-jing

melanocyte-stimulating hormone

(MSH)/447

mel'ă-nō-sīt-stim-yū'lā-ting hōr'mōn

melatonin/447

mel-ă-tōn'in

metabolism/451

mĕ-tab'ō-lizm

mineral corticosteroids/446

min'ĕr-ăl kōr' ti-kō-stēr'oydz

myxedema/456

mik-sĕ-dē'mă

neurohypophysis/447

nūr'ō-hī-pof'i-sis

norepinephrine/446

nōr'ep-i-nef'rin

ovaries/446

ō'vă-rēz

oxytocin/448

ok'sē-tō'sin

pancreatectomy/463

pan'krē-ă-tek'tŏ-mē

pancreatitis/454

pan'krē-ă-tī'tis

parathyroid glands/446

par-ă-thī'royd glanz

parathyroid hormone (PTH)/446

par-ă-thī'royd hōr'mōn

parathyroidectomy/463

pa'ră-thī-roy-dek'tŏ-mē

pineal gland/447

pin'ē-ăl gland

pituitary dwarfism/454

pi-tū'i-tār-ē dwōrf'izm

pituitary gigantism/454

pi-tū'i-tār-ē jī'gan-tizm

pituitary gland/447

pi-tū'i-tār-ē gland

polydipsia/451

pol-ē-dip'sē-ă

polyuria/451

pol-ē-yū'rē-ă

posterior pituitary/447

pos-tēr'ē-ŏr pi-tū'i-tār-ē

postprandial blood sugar

(PPBS)/460

pōst-pran'dē-ăl blŭd shu-găr

progesterone/446

prō-jes'tĕr-ōn

prolactin/447

prō-lak'tin

radioiodine therapy/464

rā'dē-ō-ī'ō-dīn thār'ă-pē

sēr-ō-tō'nin

sonography/461

sŏ-nog'ră-fē

steroid hormones/446

stēr'oyd hor'mōnz

suprarenal glands/446

sū'pră-rē'năl glanz

testes/448

tes'tēz

testosterone/448

tes-tos'tĕ-rōn

thymectomy/463

thī-mek'tō-mē

thymosin/448

thī'mō-sin

thymus gland/448

thī'mŭs gland

thyroid function study/460

thī'royd fŭnk'shŭn stŭd'ē

thyroid gland/448

thī'royd gland

thyroid uptake and image/461

thī'royd ŭp'tāk and im'ăj

thyroidectomy/463

thī-roy-dek'tŏ-mē

thyroid-stimulating hormone

(TSH)/447

thī'royd-stim-yū'lā-ting hōr'mōn

thyroxine $(T_4)/448$

thī-rok'sēn

triiodothyronine (T₃)/448

trī-ī'ō-dō-thī'rō-nēn

type 1 diabetes mellitus/454

tīp 1 dī-ă-bē'tēz mel'i-tŭs

type 2 diabetes mellitus/454

tīp 2 dī-ă-bē'tēz mel'i-tŭs

urine sugar and ketone

studies/460

yŭr'in shu-găr and kē'tōn stŭd'ēz



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

parathyroid

para / thyr / oid

R
S

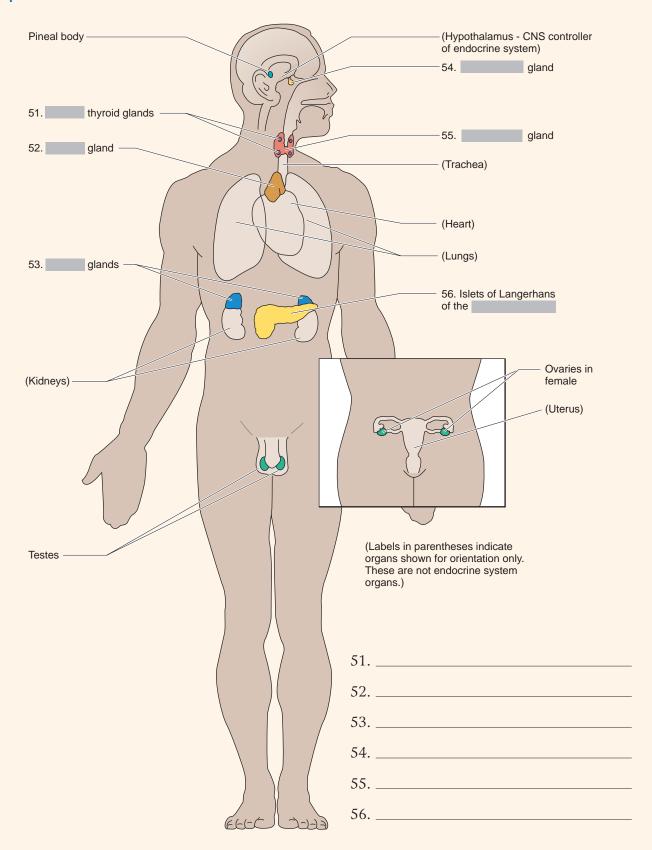
DEFINITION: alongside of/thyroid gland/resembling

1.	adenitis			
		/		
	R	S		
	DEFINITION:			
2.	hyperglycem			
		/	/	
		R		
	DEFINITION:			
3.	thyrotoxicos			
		./	/	
		R		S
	DEFINITION:			
4.	polydipsia			
		/	/	
	P	R		S
	DEFINITION:			
5.	hormonal			
		/		
	R	S		
	DEFINITION:			
6.	ketosis			
		/		
		S		
	DEFINITION:			
7.	polyuria			
		/	/	
				S
	DEFINITION:			

8.	endocrine	/	/	
	P	R	S	
9.	thyroptosis	/		
	CF	S		
10.	thymoma	/		
	R			
11.	acromegaly	/		
	CF			
12.	android	/		
	R			
13.	adrenotropic	/		
	CF	R	S	
14.	pancreatoger	ic		
		R R	S	
15.	glycosuria	/		
	R	R	S	
				e following definitions:
				hypothyroidism in adults
				l hypothyroidism
18.			most com	mon form of hyperthyroidism
19.			condition mone cha	resulting from an excessive level of cortisol hor- racterized by obesity, hyperglycemia, and weakness

4/2 MEDICAL TERMINOLOGY: A	PROGRAMINIED LEAD	RIVING APPROACH TO THE LANGUAGE OF HEALTH CARE		
20	disease characterized by enlarged features, caused by hyper- secretion of the pituitary growth hormone after puberty			
21	enlargement of the thyroid gland			
22	_ protrusion of	, ,		
23		hyposecretion of pituitary growth hormone ood bone development		
24	_ deficient level	of potassium in the blood		
25	nuclear image	of the thyroid		
26		hypersecretion of the pituitary growth hormone ood bone development		
Write the letter of the matching	term in the space	ce after the meaning:		
27. congenital hypothyroidism		a. gigantism		
28. polydipsia		b. hirsutism		
29. hyperthyroidism		c. enlarged thyroid		
30. hypophysis		d. depends on insulin		
31. goiter		e. cretinism		
32. adult hypothyroidism		f. pituitary		
33. adrenal virilism		g. does not usually depend on insulin		
34. type 2 diabetes		h. excessive thirst		
35. pituitary hypersecretion		i. myxedema		
36. type 1 diabetes		j. Graves disease		
Complete each medical term by	writing the miss	ing part:		
37. polyia = excess	ive thirst			
38secretion = abr	ormally increase	ed secretion		
39glycemia = low	blood sugar			
40. glucos = sugar				
41secretion = dec	reased secretion			
42glycemia = higl	n blood sugar			
43graphy = ultras	ound imaging			
Write out the expanded term fo	r each abbreviat	ion:		
44. CSII				

Identify the structures of the endocrine system by writing the missing words in the spaces provided:



Circle the meaning that corresponds to the combining form given:

57.	adren/o	male	extremity	adrenal gland
58.	thyr/o	nourishment	shield	chest
59.	crin/o	blue	cell	secrete
60.	gluc/o	stomach	sugar	pancreas
61.	dips/o	thirst	ketones	secrete
62.	thym/o	shield	hormone	thymus gland
63.	hormon/o	development	urging on	ketones
64.	aden/o	male	extremity	gland

Circle the correct spelling:

65. hirsutism	hirsuitism	hirsitism
66. exopthalmos	exopthamamos	exophthalmos
67. myexedema	mixedema	myxedema
68. goiter	goyter	goitir
69. androgenius	androgenous	andreogenous
70. virillism	virilism	viralism
71. epinephrine	epinefrine	epineprine
72. hypoglicemic	hypoglicemic	hypoglycemic

Give the noun that is used to form each adjective:



MEDICAL RECORD ANALYSIS

Medical Record 9-1

PROGRESS NOTE

- S: This is a 27 y.o. ♀ c̄ a known Hx of diabetes seen in the ER with nausea and vomiting for the past three hours. She has skipped two doses of her insulin because BS levels monitored at home have been low. She is now experiencing a cephalalgia similar to what she has had in the past before coma.
- O: T 35.5° C, P 90, R 20, BP 126/68 Lab blood studies: sodium 130, potassium 4.1, CO₂ 9, chloride 102, glucose 296
- A: Diabetic ketoacidosis
- P: Admit to ICU: give 10 units insulin IV; measure BS 1° p̄ insulin given, then q 4 h; check urine for sugar and ketosis q void; repeat electrolytes in a.m.

QUESTIONS ABOUT MEDICAL RECORD 9-1

- 1. What is the CC?
 - a. nausea, vomiting, and headache
 - b. nausea, vomiting, and dizziness
 - c. nausea, vomiting, and high blood pressure
 - d. nausea, vomiting, and ringing in the ears
 - e. nausea, vomiting, and unconsciousness
- 2. What is the diagnosis?
 - a. hyperglycemia
 - b. hypoglycemia
 - c. type 1 DM with ketone bodies in the
 - d. type 2 DM without ketone bodies in the blood
 - e. combination of hyperglycemia and glucosuria
- 3. As an inpatient, where was treatment provided?
 - a. neuropsychiatric facility
 - b. coronary care facility
 - c. emergency room
 - d. recovery room
 - e. critical care facility
- 4. Which of the following are electrolytes?
 - 1. sodium 2. potassium 3. chloride 4. glucose
 - a. only 1, 2, and 3 are electrolytes
 - b. only 1 and 3 are electrolytes
 - c. only 2 and 4 are electrolytes
 - d. only 4 is an electrolyte
 - e. all are electrolytes

- 5. Why were the blood electrolyte studies performed?
 - a. to examine the electrical impulses of the
 - b. to measure the level of ions in the blood in evaluation of metabolism
 - c. to measure hormone levels and determine glandular efficiency
 - d. to visualize the accumulation of radioactive isotopes to eliminate the presence
 - e. to measure the level of glucose in the blood
- 6. How should the insulin be administered?
 - a. within the skin
 - b. absorption through unbroken skin
 - c. within the muscle
 - d. within the vein
 - e. under the skin
- 7. How often should the blood glucose be measured?
 - a. one hour after insulin administration, then every four hours thereafter
 - b. once each morning
 - c. each time the patient urinates
 - d. one hour before insulin administration, then four times a day thereafter
 - e. one hour before insulin administration, then every four hours thereafter

Medical Record 9-2

FOR ADDITIONAL STUDY

Tara Nguyen had a long history of hyperthyroidism that was managed by pharmacologic treatment for more than 5 years. She was often unhappy with how she felt, however, and decided on her own to stop taking the drug. Two months ago, the symptoms of hyperthyroidism recurred, and she sought medical attention. Medical Record 9-2 is the report by Dr. Rincon, the physician who analyzed Ms. Nguyen's thyroid uptake and imaging study.

Read Medical Record 9-2 (page 477), then write your answers to the following questions in the spaces provided.

b. fasting blood sugar (FBS)

c. thyroid MRI

d. thyroid ultrasound

Q	UESTIONS ABOUT MEDICAL RECORD 9-2				
1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below.				
	propylthiouracil (PTU)				
	uptake				
	baseline (nonmedical term)				
2.	In your own words, not using medical terminology, briefly describe what seems to have been missing in Ms. Nguyen's past medical management:				
3.	In nonmedical terms, explain how the sodium iodide was administered:				
4.	In your own words, not using medical terminology, briefly describe Dr. Rincon's diagnosis:				
5.	What additional test did Dr. Rincon order on his own authority?				
	a. thyroid function study				
	b. fasting blood sugar (FBS)				
	c. thyroid MRI				
	d. thyroid ultrasound				
6.	Which of the following tests is recommended to be performed in 6 months?				
	a. thyroid function study				

Medical Record 9-2: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

THYROID UPTAKE AND IMAGING STUDY

Date of Exam: 5/29/20xx

<u>CLINICAL HISTORY:</u> The patient has more than a six year history of hyperthyroidism which was treated until approximately one year ago with propylthiouracil (PTU). The patient relates some instability in symptomatology during the treatment. She had no previous uptake and imaging study, and radioiodine therapy was never discussed with the patient. She spontaneously discontinued taking the PTU approximately one year ago and has had recurrent symptoms of hyperthyroidism in the last two months.

TECHNIQUE: The patient ingested a capsule containing 200 μ Ci ¹²³I sodium iodide. Uptakes in the neck were measured at 6 and 24 hours. Images of the thyroid were obtained in multiple projections at 6 hours.

FINDINGS: Radioiodine uptake at 6 hours was 37% (normal: 0-15%), and at 24 hours, uptake was 57% (normal: 5-35%). Thyroid images reveal the gland to be diffusely modestly enlarged. Multiple areas of reduced function correlating with palpable nodules are present in both thyroid lobes with the largest nodule being present in the lower poles of both lobes but with the right lobe being somewhat more severely overall affected than the left lobe. No dominant functioning thyroid nodule is evident.

CONCLUSION:

TOXIC MULTINODULAR GOITER

NOTE: Because of the presence of the multiple nodules which are likely on a benign basis, I took the liberty of ordering a thyroid ultrasound as a baseline. This will be separately reported, and it is suggested that the thyroid ultrasound be repeated in six months to one year.

C. Rincon, M.D.

CR:se

D: 5/29/20xx T: 5/31/20xx

THYROID UPTAKE AND IMAGING STUDY PT. NAME: NGUYEN, TARA T. ID NO: NM-384023

Sex: F Age: 58 Y DOB: 02/18/xx

ATT. PHYS. T. Hutton

ANSWERS TO PRACTICE EXERCISES

1. aden/itis

R

gland/inflammation

2. hyper/glyc/emia

P R S above or

excessive/sugar/blood condition

3. thyro/toxic/osis

CF R

thyroid gland (shield)/poison/condition or increase

4. poly/dips/ia

P R S

many/thirst/condition of

5. hormon/al

hormone (an urging on)/pertaining to

6. ket/osis

R S

ketone bodies/condition or increase

7. poly/ur/ia

P R S

many/urine/condition of

8. endo/crin/e

R S

within/to secrete/noun marker

9. thyro/ptosis

CF

thyroid gland

(shield)/falling or downward displacement

10. thym/oma

thymus gland/tumor

11. acro/megaly

CF

extremity/enlargement

12. andr/oid

R S

male/resembling

13. adreno/trop/ic

CF R S

adrenal gland/ nourishment or development/

pertaining to

14. pancreato/gen/ic

CF

R S pancreas/origin or

production/pertaining to

15. glycos/ur/ia

R S R

sugar/urine/condition of

- 16. myxedema
- 17. cretinism
- 18. Graves disease
- 19. Cushing syndrome
- 20. acromegaly
- 21. goiter
- 22. exophthalmos or exophthalmus
- 23. pituitary dwarfism
- 24. hypokalemia
- 25. thyroid uptake and image
- 26. gigantism or pituitary gigantism
- 27. e
- 28. h
- 29. j
- 30. f
- 31. c
- 32. i 33. b
- 34. g
- 35. a 36. d
- 37. polydipsia
- 38. hypersecretion
- 39. hypoglycemia
- 40. glucosuria

- 41. hyposecretion
- 42. hyperglycemia
- 43. sonography or ultrasonography
- 44. continuous subcutaneous insulin infusion
- 45. hormone replacement therapy
- 46. fasting blood sugar
- 47. diabetes mellitus
- 48. postprandial blood sugar
- 49. glucose tolerance test
- 50. diabetic ketoacidosis
- 51. para
- 52. thymus
- 53. adrenal
- 54. pituitary
- 55. thyroid
- 56. pancreas
- 57. adrenal gland
- 58. shield
- 59. secrete
- 60. sugar
- 61. thirst
- 62. thymus gland
- 63. urging on
- 64. gland
- 65. hirsutism
- 66. exophthalmos
- 67. myxedema
- 68. goiter
- 69. androgenous
- 70. virilism
- 71. epinephrine
- 72. hypoglycemic
- 73. acromegaly
- 74. exophthalmos or exophthalmus
- 75. metabolism
- 76. diabetes
- 77. hypoglycemia

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 9-1: Progress Note

1. a 2. c 3. e 4. a 5. b 6. d 7. a

Medical Record 9-2: For Additional Study

See CD-ROM for answers.



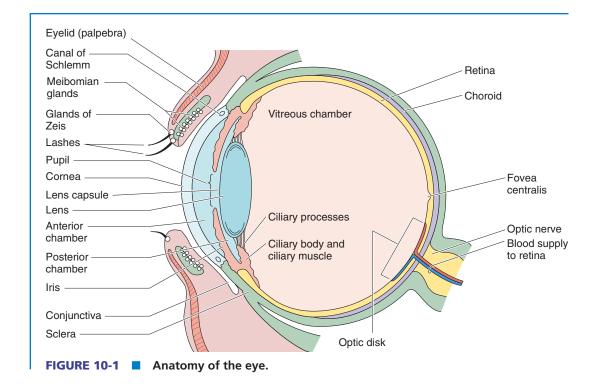


✓ Chapter 10 Checklist	LOCATION
☐ Read Chapter 10: The Eye and complete all programmed review segments.	pages 481-508
 Review the starter set of flash cards and term components related to Chapter 10. 	back of book
☐ Complete the Chapter 10 Practice Exercises and Medical Record Analysis 10-1.	pages 511-517
□ Complete Medical Record Analysis 10-2 For Additional Study.	pages 518-521
☐ Complete the Chapter 10 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 10 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 10 terms.	CD-ROM

OVERVIEW OF THE EYE

The eyes are the organs of sight that provide three-dimensional vision (Fig. 10-1):

- 🌞 Light enters the eye through the pupil, the size of which is regulated by the muscles of the iris.
- ***** The lens focuses light rays on the retina, the nerve tissue in the inner posterior part of the eye.
- 🌞 Rods and cones, the visual receptor neurons in the retina, respond to the light waves.
- Nerve fibers from the rods and cones join in the optic disk, from which the optic nerve carries transmissions to the brain.
- Other functions of the eye are performed by protective and lubricating structures.





Self-Instruction: Combining Forms

COMBINING FORM	MEANING
aque/o	water
blephar/o	eyelid
conjunctiv/o	conjunctiva (to join together)
corne/o, kerat/o	cornea
cycl/o	circle, ciliary body
ir/o, irid/o	colored circle, iris
lacrim/o, dacry/o	tear
ocul/o, ophthalm/o, opt/o	eye
phac/o, phak/o	lens (lentil)
phot/o	light
presby/o	old age
retin/o	retina
scler/o	hard or sclera
vitre/o	glassy
-opia (suffix)	condition of vision



Programmed Review: Combining Forms

ANSWERS	REVIEW
ophthalm/o study, logist eye	10.1 The three combining forms meaning eye are <i>ocul/o</i> , <i>opt/o</i> , and Ophthalmology defines the specialty related to the of the eye. An ophthalmo is a physician who specializes in the study and treatment (including surgery) of the
opt/o measuring eye	10.2 Optometry is the profession that examines the eyes for vision problems and other disorders. The combining form referring to the eye in this term is The suffix -metry generally refers to a process of Optometrist is the title of the professional who specializes in measuring the
pertaining to, ocul/o	10.3 The combining form used in ocular, an adjective meaning the eye, is
eyelid, blephar/o inflammation blepharitis	10.4 A blepharospasm is an involuntary muscular contraction of the The combining form for eyelid is For example, the suffix -itis means, and the term for an inflamed eyelid is
water	10.5 The combining form <i>aque/o</i> means in reference to the eye.
cornea kerat/o keratoplasty	10.6 <i>Corne/o</i> is the Latin combining form used to name the part of the eye called the The second combining form meaning cornea, from the Greek word kera (meaning horn or hard tissue), is It is used in the term describing the surgical repair or reconstruction of the cornea:
lacrim/o	10.7 As often happens, there are two combining forms for tears, one based on a Latin word and one based on a Greek word. The lacrimal gland (tear gland) comes from this combining form: The term dacryocyst refers to the lacrimal sac (<i>cyst</i> = sac), where tears are collected before they flow to the nose. Inflammation of the
dacryocystitis dacry/o	lacrimal sac is therefore called This second combining form for tears is

ANSWERS	REVIEW
lentil phac/o, phak/o dissolution breaking down lens	10.8 The Greek word phakos means lentil or anything shaped like a lentil and, thus, is used for the lens of the eye, because it looks like a As sometimes happens, two spellings evolved for this combining form: and Recall that the suffix -lysis means breaking down or Phacolysis is therefore the of the lens. A phakoma is a tumor-like condition of the
phot/o photophobia	10.9 The combining form meaning light is An abnormal fear or sensitivity to light is
vision old condition	10.10 The suffix <i>-opia</i> refers to a condition of Because the combining form <i>presby/o</i> means age, the term presbyopia refers to a vision that is common in old age.
scler/o retin/o vitre/o	 10.11 Many combining forms are very similar to the terms that express their meaning. For example, the combining form meaning the conjunctiva is <i>conjunctiv/o</i>. The combining form for the sclera is The combining form meaning retina is, and the combining form referring to the vitreous (glassy substance) of the eye is
circle incision cyclotomy	10.12 <i>Cycl/o</i> is a combining form referring to a or the ciliary body, a ring of tissue in the eye. Recall that <i>-tomy</i> is a suffix meaning Therefore, an incision in the ciliary body is called a
irid/o colored, iris inflammation excision or removal iridectomy	10.13 <i>Ir/o</i> and are the two combining forms referring to the circle of the eye, which is known as the Iritis refers to an of the iris. The combination of the second combining form for iris with <i>-ectomy</i> , a suffix meaning, forms the term for an excision of a portion of the iris:



Self-Instruction: Anatomic Terms

TERM	MEANING
anterior chamber an-tēr'ē-ōr chām'bĕr	fluid-filled space between the cornea and iris

TERM	MEANING
aqueous humor ak'wē-ŭs hyū'mŏr	watery liquid secreted by the ciliary processes that fills the anterior and posterior chambers of the eye and provides nourishment for the cornea, iris, and lens (<i>humor</i> = fluid)
canal of Schlemm kă-nal' of shlem	duct in the anterior chamber that carries filtered aqueous humor to the veins and bloodstream
choroid kō'royd	vascular layer beneath the sclera that provides nourishment to the outer portion of the retina
ciliary body sil'ē-ar-ē bod'ē	ring of tissue behind the peripheral iris that is composed of ciliary muscle and ciliary processes
ciliary muscle sil'ē-ar-ē mŭs'ĕl	smooth muscle portion of the ciliary body, which contracts to assist in near vision
ciliary processes sil'ē-ar-ē pros'es-ēz	epithelial tissue folds on the inner surface of the ciliary body that secrete aqueous humor
conjunctiva kon-jŭnk-tī'vă	mucous membrane that lines the eyelids and outer surface of the eyeball
cornea kōr'nē-ă	transparent, anterior part of the eyeball covering the iris, pupil, and anterior chamber that functions to refract (bend) light to focus a visual image
eyelid ī'lid palpebra pal-pē'bră	movable, protective fold that opens and closes, covering the eye
fovea centralis fō'vē-ă sen-trā'lis	pinpoint depression in the center of the macula lutea that is the site of sharpest vision (<i>fovea</i> = pit)
fundus fŭn'dŭs	interior surface of the eyeball, including the retina, optic disk, macula, and posterior pole (curvature at the back of the eye) (fundus = base)
glands of Zeis glanz of tsīs	oil glands surrounding the eyelashes
meibomian glands mī-bō'mē-ăn glanz	oil glands located along the rim of the eyelids
iris ī'ris	colored circle; colored part of the eye located behind the cornea that contracts and dilates to regulate light passing through the pupil
lacrimal gland (Fig. 10-2) lak'ri-măl gland	gland located in the upper outer region above the eyeball that secretes tears
lacrimal ducts lak'ri-măl dŭkts	tubes that carry tears to the lacrimal sac
lacrimal sac lak'ri-măl sak	structure that collects tears before emptying into the nasolacrimal duct
lens lenz	transparent structure behind the pupil that bends and focuses light rays on the retina

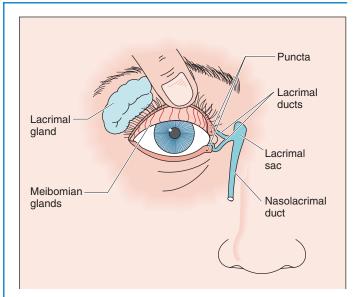


FIGURE 10-2 Lacrimal apparatus.

TERM	MEANING
lens capsule lenz kap'sūl	capsule that encloses the lens
macula lutea (see Fig. 10-13, B) mak'yū-lă lū'tĕ-ā macula mak'yū-lă	central region of the retina; responsible for central vision; yellow pigment provides its color (<i>lutea</i> = yellow)
nasolacrimal duct nā-zō-lak'ri-măl dŭkt	passageway for tears from the lacrimal sac into the nose
optic disk (see Fig. 10-13, B) op'tik disk	exit site of retinal nerve fibers as well as entrance point for retinal arteries and exit point for retinal veins
optic nerve op'tik nĕrv	nerve responsible for carrying impulses for the sense of sight from the retina to the brain
posterior chamber pos-tēr'ē-ōr chām'bĕr	space between the back of the iris and the front of the vitreous chamber; filled with aqueous humor
pupil pyū'pĭl	black, circular opening in the center of the iris through which light passes as it enters the eye
retina (see Fig. 10-13, B) ret'i-nă	innermost layer that perceives and transmits light to the optic nerve
cones kōnz	cone-shaped cells within the retina that are color sensitive and respond to bright light
rods rodz	rod-shaped cells within the retina that respond to dim light
sclera sklēr'ă	tough, fibrous, white outer coat extending from the cornea to the optic nerve

TERM	MEANING
trabecular meshwork tră-bek'yū-lăr mesh'wĕrk	mesh-like structure in the anterior chamber that filters the aqueous humor as it flows into the canal of Schlemm
vitreous vit'rē-ŭs	jelly-like mass filling the inner chamber between the lens and retina that gives bulk to the eye

Programmed Review: Anatomic Terms

ANSWERS	REVIEW
cornea	10.14 Let's look at the anatomy of the eye in the approximate order of structures involved as light waves enter the eye and result in nerve transmissions to the brain. Light first passes through a transparent outer covering over the iris, pupil, and anterior chamber called the
anterior front aqueous water canal trabecular	between the cornea and iris. It is called anterior because it is the fluid chamber in the eye. The fluid within the anterior chamber is called humor. Recall that the combining form aque/o means This watery fluid is carried to the veins through the of Schlemm. As the aqueous humor flows into this canal, it is filtered by a mesh-like structure called the meshwork.
pupil iris light	10.16 The light waves then pass through the black, circular opening in the center of the iris called the The surrounding the pupil is the colored part of the eye that contracts and dilates to regulate the amount of that passes through the pupil.
posterior humor chamber behind or in back of	10.17 Between the back of the iris and the upper and lower sections of the lens and vitreous chamber is the chamber, which is also filled with aqueous It is called the posterior because it is the anterior chamber.
lens	10.18 Light waves passing through the pupil and anterior chamber reach the, a transparent structure that focuses the light rays on the retina. The lens is enclosed in a structure called the lens

ANSWERS	REVIEW
sclera	10.26 The tough outer layer of the eye extending from the cornea around the retina to the optic nerve is called the
palpebra palpebrae	10.27 Additional eye structures help to protect the eye from the environment. The medical term for eyelid is The plural of this term is The palpebrae can close over the eye.
meibomian Zeis	10.28 The oil glands located along the rim of the eyelids are called the glands. Other oil glands surrounding the eyelashes are called the glands of
conjunctiva	10.29 The mucous membrane that lines the eyelids and outer surface of the eyeball is called the, from the combining form <i>conjunctiv/o</i> . Because this is the outermost structure of the eye, it is easily irritated by foreign substances, causing an inflammation called
lacrim/o lacrimal glands	10.30 There are two combining forms meaning tear or tears: dacry/o, which is Greek, and, which is Latin. Note that the Latin form is used to name the anatomy related to tears. For example, the glands that secrete tears, located in the upper outer region above the eyeball, are called the
ducts	10.31 The tiny tubes that carry tears away from the eye are the lacrimal These ducts carry tears to the lacrimal, which collects tears before emptying into the nasolacrimal duct.
nasolacrimal nose	10.32 Tears from the lacrimal sac reach the nose through the duct. The combining form <i>nas/o</i> means

Self-Instruction: Symptomatic Terms

TERM	MEANING
asthenopia as-thĕ-nō'pē-ă	eyestrain (asthenia = weak condition)
blef'ă-rō-spazm	involuntary contraction of the muscles surrounding the eye causing uncontrolled blinking and lid squeezing

TERM	MEANING
diplopia di-plō'pē-ă	double vision
exophthalmos or exophthalmus ek-sof-thal'mos or ek-sof-thal'mŭs	abnormal protrusion of one or both eyeballs
lacrimation lak-ri-mā'shŭn	secretion of tears
nystagmus nis-tag'mŭs	involuntary, rapid, oscillating movement of the eyeball (nystagmos = a nodding)
photophobia fō-tō-fō'bē-ă	extreme sensitivity to, and discomfort from, light
scotoma skō-tō'mă	blind spot in vision (skotos = darkness)

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
vision diplopia	10.33 Recall that the suffix <i>-opia</i> means a condition of The combining form <i>dipl/o</i> means double. The condition of having double vision is termed
asthenopia	10.34 Based on the Greek word asthenia, which means weakness, the condition of eyestrain (weak vision) is called
phot/o photophobia	10.35 Recall that the combining form meaning light is Extreme sensitivity to, and discomfort from, light is termed
blephar/o blepharospasm	10.36 Again, the combining form for eyelid is The term for a sudden involuntary contraction of the muscles around the eyelid is
ophthalm/o, out	10.37 The three combining forms for eye are <i>ocul/o</i> , <i>opt/o</i> , and The prefix <i>ex-</i> means or away. Using the last combining form and this prefix, the term for the condition in
exophthalmos exophthalmus	which the eyeballs protrude out is termed or or (alternate spellings).

ANSWERS	REVIEW
tear process lacrimation	10.38 <i>Lacrim/o</i> is a combining form meaning The suffix -ation refers to a The term for the process of secreting tears is
nystagmus	10.39 The Greek word nystagmos means a nodding, such as the movement of the head up and down or sideways. The condition of rapid oscillation of the eyeballs is called
scotoma	10.40 The medical term for a visual blind (dark) spot comes from the Greek word that means darkness. The blind spot is called a



Self-Instruction: Diagnostic Terms

TERM	MEANING
refractive errors rē-frak'tiv er'ōrz	defects in the bending of light as it enters the eye, causing an improper focus on the retina
astigmatism ă-stig'mă-tizm	distorted vision caused by an oblong or cylindrical curvature of the lens or cornea that prevents light rays from coming to a single focus on the retina (<i>stigma</i> = point)
hyperopia (Fig. 10-3, B) <i>hī-pĕr-ō'pē-ă</i>	farsightedness; difficulty seeing close objects when light rays are focused on a point behind the retina
myopia (Fig. 10-3, C) <i>mī-ō'pē-ă</i>	nearsightedness; difficulty seeing distant objects when light rays are focused on a point in front of the retina
presbyopia prez-bē-ō'pē-ă	impaired vision caused by old age or loss of accommodation
accommodation ă-kom'ŏ-dā'shŭn	ability of the eye to adjust focus on near objects

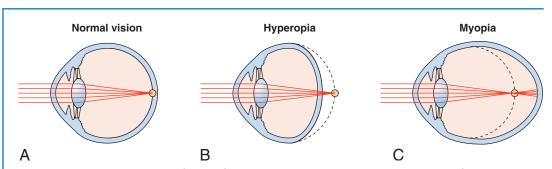


FIGURE 10-3 A. Proper focus of light rays on the retina. B. Light rays are focused on a point behind the retina in hyperopia. C. Light rays are focused at a point in front of the retina in myopia.



FIGURE 10-4 Chalazion.

TERM	MEANING
amblyopia am-blē-ō'pē-ă	decreased vision in early life because of a functional defect that can occur as a result of strabismus, refractive errors (when one eye is more nearsighted, farsighted, or astigmatic than the other), or trauma; usually occurs in one eye; also known as lazy eye (<i>ambly/o</i> = dim)
aphakia ă-fā'kē-ă	absence of the lens, usually after cataract extraction
blepharitis blef'ă-rī'tis	inflammation of the eyelid
blepharochalasis blef'ă-rō-kal'ă-sis dermatochalasis der'mă-tō-kă-lā'sis	baggy eyelid; overabundance and loss of skin elasticity on the upper eyelid causing a fold of skin to hang down over the edge of the eyelid when the eyes are open (<i>chalasis</i> = a slackening)
blepharoptosis blef'ă-rop'tō-sis ptosis tō'sis	drooping of the eyelid; usually caused by paralysis
chalazion (Fig. 10-4) <i>ka-lā'zē-on</i>	chronic nodular inflammation of a meibomian gland, usually the result of a blocked duct; commonly presents as a swelling on the upper or lower eyelid (<i>chalaza</i> = hailstone)
cataract (Figs. 10-5 and 10-6, B) kat'ă-rakt	opaque clouding of the lens causing decreased vision
conjunctivitis kon-jŭnk-ti-vī'tis	pinkeye; inflammation of the conjunctiva
dacryoadenitis dak'rē-ō-ad-ĕ-nī'tis	inflammation of the lacrimal gland
dacryocystitis dak'rē-ō-sis-tī'tis	inflammation of the tear sac

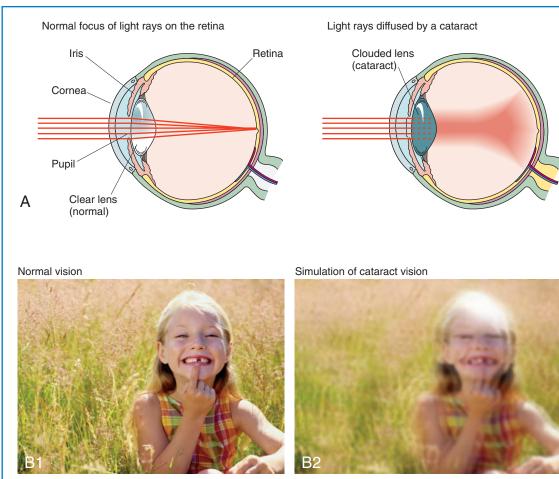


FIGURE 10-5 Cataract. A. Normal light focus compared with light focus interference caused by a cataract. B. Simulation of cataract vision.

TERM	MEANING
diabetic retinopathy (Fig. 10-6, C; see Fig. 10-13, C) dī-ă-bet'ik ret-i-nop'ă-thē	disease of the retina in diabetics characterized by capillary leakage, bleeding, and new vessel formation (neovascularization) leading to scarring and loss of vision
ectropion (Fig. 10-7, A) ek-trō'pē-on	outward turning of the rim of the eyelid (<i>tropo</i> = turning)
entropion (Fig. 10-7, B) <i>en-trō'pē-on</i>	inward turning of the rim of the eyelid
epiphora ē-pif'ō-ră	abnormal overflow of tears caused by blockage of the lacrimal duct (<i>epi</i> = upon; <i>phero</i> = to bear)
glaucoma (Fig. 10-6, D) glaw-kō'mă	group of diseases of the eye characterized by increased intraocular pressure that results in damage to the optic nerve, producing defects in vision
hordeolum (Fig. 10-8) hōr-dē'ō-lŭm	sty; an acute infection of a sebaceous gland of the eyelid (hordeum = barley)

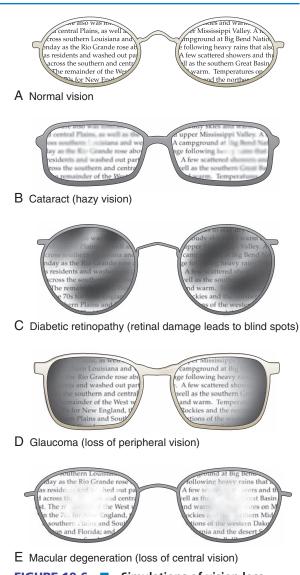


FIGURE 10-6 Simulations of vision loss.





FIGURE 10-7 Eyelid abnormalities. A. Severe bilateral lower-lid ectropion. B. Lower-lid entropion causing the lashes to rub on the cornea.



FIGURE 10-8 Upper-lid hordeolum.

TERM	MEANING
iritis ī-rī'tis	inflammation of the iris
keratitis ker-ă-tī'tis	inflammation of the cornea
macular degeneration (Fig. 10-6, E) mak'yū-lăr dē-jen-ĕr-ā'shŭn	breakdown or thinning of the tissues in the macula, resulting in partial or complete loss of central vision
pseudophakia sū-dō-fak'ē-ă	an eye in which the natural lens is replaced with an artificial lens implant (<i>pseudo</i> = false)
pterygium (Fig. 10-9) tĕ-rij'ē-ŭm	fibrous, wing-shaped growth of conjunctival tissue that extends onto the cornea, developing most commonly from prolonged exposure to ultraviolet light
retinal detachment ret'i-năl dē-tach'ment	separation of the retina from the underlying epithelium, disrupting vision and resulting in blindness if not repaired surgically



FIGURE 10-9 ■ Pterygium caused by ultraviolet exposure and drying.

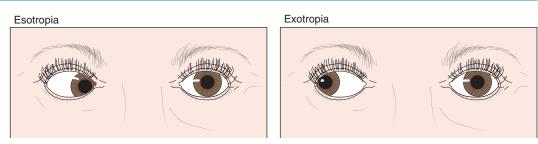


FIGURE 10-10 Strabismus.

TERM	MEANING
retinitis ret-i-nī'tis	inflammation of the retina
strabismus (Fig. 10-10) stra-biz'mŭs heterotropia het'ĕr-ō-trō'pē-ă	a condition of eye misalignment caused by intraocular muscle imbalance (<i>strabismus</i> = a squinting; <i>hetero</i> = other)
esotropia es-ō-trō'pē-ă	right or left eye deviates inward, toward nose (eso = inward; tropo = turning)
exotropia ek-sō-trō'pē-ă	right or left eye deviates outward, away from nose (exo = out; tropo = turning)
scleritis sklĕ-rī'tis	inflammation of the sclera
trichiasis trĭ-kī'ă-sis	misdirected eyelashes that rub on the conjunctiva or cornea

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
inflammation	10.41 Recall that the suffix <i>-itis</i> means
blepharitis	Inflammation of the eyelid is therefore termed
conjunctivitis	Inflammation of the conjunctiva is called
	(or pinkeye).
	10.42 In addition to <i>corne/o</i> , a combining form that means cornea is
kerat/o	The term for inflammation of the cornea uses this
keratitis	second form:
	10.43 The two combining forms for the iris of the eye are <i>irid/o</i> and
ir/o	The latter is used to make the term for inflammation of the
iritis	iris:

ANSWERS	REVIEW
retinitis scleritis	10.44 Inflammation of the retina is termed Inflammation of the sclera is
dacry/o dacryocyst dacryocystitis	10.45 The two combining forms for tears are <i>lacrim/o</i> and The combining form <i>cyst/o</i> means a sac. Using the latter form for tears, the tear sac is termed the Inflammation of the tear sac is called
inflammation lacrimal or tear	10.46 The combining form <i>aden/o</i> means gland. Thus, the term dacryoadenitis means of the gland.
refractive vision beyond hyperopia myopia	10.47 Conditions in which the eye incorrectly focuses light on the retina are called errors. Recall that the suffix -opia means a condition of The prefix hyper- means excessive or The condition of farsightedness occurs when the light rays from near objects focus beyond the retina. This is called The opposite condition of nearsightedness is called
presby/o presbyopia accommodation	10.48 The combining form meaning old age is The visual condition of impaired vision caused by old age is called This happens because of a loss of accommodation. The ability of the eye to adjust focus on near objects is called
blepharochalasis dermatochalasis	10.49 The Greek word chalasis means a slackening, such as with baggy skin. The term for a baggy eyelid (using the combining form for eyelid) is The combining form dermat/o means skin. Another term for baggy eyelid uses that combining form:
downward	10.50 Recall that the suffix <i>-ptosis</i> means a falling or displacement. The term for a drooping of the eyelid is This is usually caused by paralysis.
chalazion chalazia	10.51 From the Greek word for a small hailstone (chalazion), which it may resemble in appearance, comes the term for a chronic nodular inflammation of a meibomian gland: The plural of chalazion is

ANSWERS	REVIEW
cataract	10.52 The clouding of the lens that causes decreased vision is called a
condition of disease retinopathy	10.53 The combining form <i>path/o</i> means disease, and the suffix <i>-y</i> means process of or Thus, <i>-pathy</i> refers to a condition of A retinal disease condition in diabetics caused by problems with the capillaries is called diabetic
out ectropion, within	10.54 The Greek word tropo means turning. The prefix <i>ec-</i> means away or The condition of the eyelid rim turning outward is called The prefix <i>en-</i> , however, means or inward. The condition of the rim of the eyelid turning in is called
entropion	·
upon epiphora	10.55 If the lacrimal duct becomes blocked, tears that might otherwise flow to the lacrimal sac overflow. The term for this condition begins with the prefix <i>epi-</i> , which means The tears flow upon and out of the outer surface of the eye. This condition is called
glaucoma	10.56 The group of diseases characterized by increased intraocular pressure, resulting in damage to the ocular nerve and causing visual defects, is called
phak/o condition of pseudophakia	10.57 Recall that the combining forms for lens are <i>phac/o</i> and The latter spelling along with the prefix <i>pseudo-</i> (false) and the suffix <i>-ia</i> , meaning, forms the term for an implanted artificial lens:
strabismus condition of	10.58 From the Greek work strabismos, meaning a squinting, comes this term for a condition of eye misalignment: Recall that the word root <i>tropo</i> means a turning, and that the suffix <i>-ia</i> means a The combining form <i>heter/o</i> means
heterotropia	the other. Another term for strabismus is named for the appearance of one eye turning toward the other: If the eye turns inward (<i>eso</i> = inward) toward the nose, this is called
esotropia exotropia	If the eye turns outward (<i>exo</i> = outward), this is called

ANSWERS	REVIEW
macular degeneration	10.59 A breakdown of tissues in the macula that causes a loss of central vision is called
detachment	10.60 Separation of the retina from the underlying tissue, usually requiring surgical repair, is called retinal
hordeolum	10.61 The Latin word hordeolus means a little barley grain, which is similar in appearance to a sty, an acute infection of a sebaceous gland of the eyelid. The medical term for a sty is
pterygium ultraviolet	10.62 The combining form <i>pteryg/o</i> means wing-shaped. A triangular, or wing-shaped, fibrous growth of conjunctival tissue extending onto the cornea is called Pterygia are most commonly caused by prolonged exposure to light.
presence	10.63 Recall that the suffix <i>-iasis</i> means formation or of. The combining form <i>trich/o</i> means hair. The presence of misdirected eyelashes that rub on the conjunctiva or cornea is called
amblyopia	10.64 <i>Ambly/o</i> , a combining form meaning dim, is the foundation of the term, commonly called lazy eye, that describes the condition of decreased vision in early life because of a functional defect (e.g., strabismus and refractive error).



Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
distance visual acuity (Fig. 10-11) dis'tănts vizh'yū-ăl ă-kyū'i-tē	measure of the ability to see the details and shape of identifiable objects from a specified distance, usually from 20 feet (6 meters); normal distance visual acuity is 20/20 (6/6)
fluorescein angiography (Fig. 10-12) flōr-es'ē-in an-jē-og'ră-fē	visualization and photography of retinal and choroidal vessels made as fluorescein dye, which is injected into a vein, circulates through the eye



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FIGURE 10-11 Snellen eye chart for testing distance visual acuity.



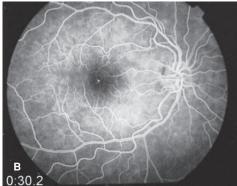




FIGURE 10-12 Fluorescein angiography photographs. A. Right eye before injection of fluorescein. B. Maximal levels of fluorescein circulating through the retinal blood vessels 30 seconds after injection. C. Elimination after 5 minutes.

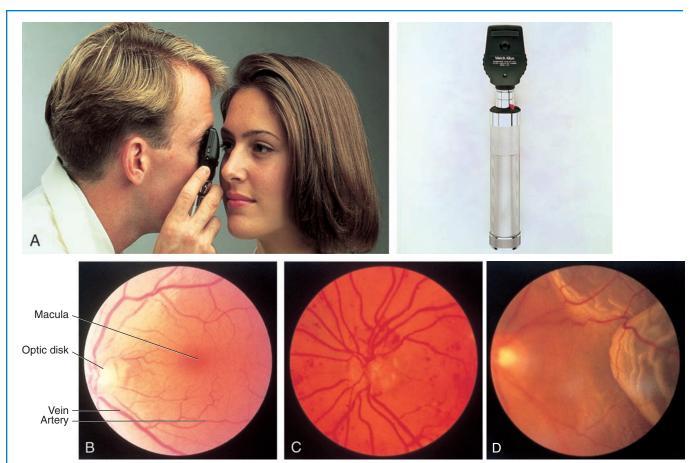


FIGURE 10-13 A. Doctor performing ophthalmoscopy using an ophthalmoscope. B. Normal retina. C. Aneurysms seen in diabetic retinopathy. D. Retinal detachment.

TEST OR PROCEDURE	EXPLANATION
ophthalmoscopy (Fig. 10-13) of-thăl-mos'kŏ-pē	use of an ophthalmoscope to view the interior of the eye
slit lamp biomicroscopy (Fig. 10-14) slit lamp bī'ō-mī-kros'kŏ-pē	use of a tabletop microscope used to examine the eye, especially the cornea, lens, fluids, and membranes
sonography sŏ-nog'ră-fē	use of high-frequency sound waves to detect pathology within the eye (e.g., foreign bodies and detached retina)
tonometry (Fig. 10-15) tō-nom'ĕ-trē	use of a tonometer to measure intraocular pressure, which is elevated in glaucoma

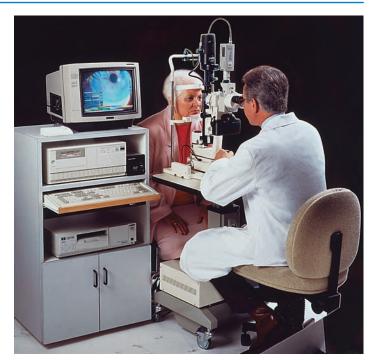


FIGURE 10-14 Slit lamp biomicroscope.

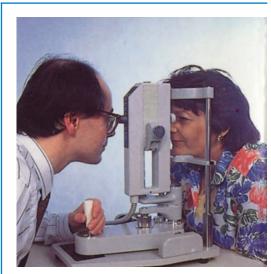


FIGURE 10-15 Tonometer/tonometry.

Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
	10.65 Again, the three combining forms meaning eye are <i>ocul/o</i> ,
ophthalm/o	opt/o, and The last one is used with the suffix
	that means the process of examination to make the term for use of an
ophthalmoscopy	ophthalmoscope to view the interior of the eye:

ANSWERS	REVIEW
visual acuity normal	10.66 The diagnostic test that measures the ability to see objects at a specified distance, usually from 20 feet (6 meters), is called distance A result of 20/20 (6/6) represents distance visual acuity.
fluorescein	10.67 Angiography, which is radiography of blood vessels after injection of a contrast medium, is used in many body areas. The procedure used with the eye is called angiography, which is named for the fluorescein dye that is injected into a vein to circulate through the eye.
sonography recording	10.68 The use of high-frequency sound waves to make an image for detecting pathology in the eye is called, or ultrasound. The suffix <i>-graphy</i> means a process of
tonometry process	10.69 A tonometer measures intraocular pressure as a test for glaucoma. This procedure is called The suffix <i>-metry</i> means a of measuring.
biomicroscopy	10.70 A special microscope is used to examine eye structures. This procedure is called slit lamp

Self-Instruction: Operative Terms

TERM	MEANING
blepharoplasty blef'ă-rō-plast-tē	surgical repair of an eyelid
cataract extraction kat'ă-rakt ek-strak'shŭn	excision of a cloudy lens from the eye
cryoretinopexy krī-ō-ret'i-nō-pek-sē cryopexy krī'ō-pek-sē	use of intense cold to seal a hole or tear in the retina; used to treat retinal detachment
dacryocystectomy dak'rē-ō-sis-tek'tŏ-mē	excision of a lacrimal sac
enucleation ē-nū-klē-ā'shŭn	excision of an eyeball
iridectomy ir-i-dek'tŏ-mē	excision of a portion of iris tissue

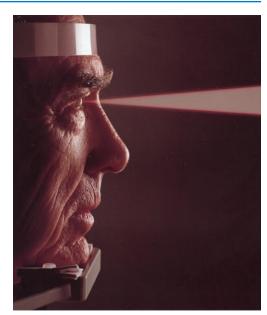


FIGURE 10-16 ■ Simulation of laser application.

TERM	MEANING
iridotomy ir-i-dot'ŏ-mē	incision into the iris (usually with a laser) to allow drainage of aqueous humor from the posterior to anterior chamber; used to treat a type of glaucoma
keratoplasty ker'ă-tō-plas-tē	corneal transplantation; replacement of a diseased or scarred cornea with a healthy one from a matched donor
laser surgery (Fig. 10-16) lā'zĕr sŭr'jĕr-ē	use of a laser to make incisions or destroy tissues; used to create fluid passages or obliterate tumors, aneurysms, etc.
laser-assisted in situ keratomileusis (LASIK) lā'zĕr-ă-sis'tĕd in sī'tū ker'ă-tō- mī-lū'sis (lā'sik)	a technique using the excimer laser to reshape the surface of the cornea to correct refractive error (e.g., myopia, hyperopia, and astigmatism) (<i>smileusis</i> = carving)
intraocular lens (IOL) implant (Fig. 10-17) in'tră-ok'yū-lăr lenz im'plant	implantation of an artificial lens to replace a defective natural lens (e.g., after cataract extraction)
phacoemulsification fak'ō-ē-mŭl-si-fi-kā'shŭn	use of ultrasound to shatter and break up a cataract, with aspiration and removal
scleral buckling sklēr'ăl bŭk'ling	surgery to treat retinal detachment by placing a band of silicone around the sclera to cinch it toward the middle of the eye and relieve pull on the retina; often combined with other techniques to seal retinal tears (e.g., cryoretinopexy)



FIGURE 10-17 Size comparison of an intraocular lens to a dime.

Programmed Review: Operative Terms

ANSWERS	REVIEW
-plasty blepharoplasty	10.71 Recall that the suffix for surgical repair or reconstruction is The surgical repair of an eyelid is termed
-pexy cryoretinopexy	10.72 The combining form <i>cry/o</i> means cold. Recall that the operative suffix meaning suspension or fixation is The operative procedure using intense cold to seal a hole in the retina is called, or simply cryopexy.
cataract intraocular lens implant within	10.73 The excision of a cloudy lens from the eye is called a extraction. After the lens has been excised, an artificial lens may be implanted in a procedure called an (IOL) The prefix intra- means
lacrimal -ectomy dacryocystectomy	10.74 Recall that dacryocyst means sac, and that the surgical suffix for excision is Therefore, the term for excision of a lacrimal sac is
iridectomy	10.75 The excision of a portion of iris tissue is

ANSWERS	REVIEW
-tomy iridotomy	10.76 The surgical suffix meaning incision is An incision into the iris to allow drainage from the posterior chamber is called an
enucleation	10.77 The Latin word enucleo means to remove the kernel, such as the kernel of a nut. The medical term for removing an entire structure, such as the eyeball (or a tumor), without rupturing it is
kerat/o keratoplasty	10.78 The two combining forms referring to the cornea are <i>corne/o</i> and, which also can mean hard. Combining the latter with the suffix for surgical repair or reconstruction yields this term for a corneal transplant:
laser surgery in situ keratomileusis	10.79 Lasers are used in many operative techniques to make incisions or destroy tissues. This is generally called A special technique using a laser to reshape the surface of the cornea is termed laser-assisted (LASIK).
phacoemulsification	10.80 The term emulsification refers to breaking up a substance and distributing it through another substance, generally a liquid. A surgical procedure uses ultrasound to shatter and break up a cataract such that after emulsification, it can be removed by aspiration. This procedure is called
buckling	10.81 A surgical procedure to treat retinal detachment by placing a "buckle-like" band of silicone around the sclera to cinch it toward the middle of the eye and relieve pull on the retina is simply called scleral



Self-Instruction: Therapeutic Terms

TERM	MEANING
contact lens kon'takt lenz	small, plastic, curved disk with optical correction that fits over the cornea; used to correct refractive errors
eye instillation ī in-sti-lā'shŭn	introduction of a medicated solution in the eye, usually administered by a drop (gt) or drops (gtt) in the affected eye or eyes

TERM	MEANING
eye irrigation ī ir'i-gā'shŭn	washing of the eye with water or other fluid (e.g., saline)
COMMON THERAPEUTIC DRUG CLASSIFICATIONS	
antibiotic ophthalmic solution an'tē-bī-ot'ik of-thal'mik sŏ-lū'shŭn	antimicrobial agent in solution; used to treat bacterial infections (e.g., conjunctivitis and corneal ulcers)
cycloplegic sī-klō-plē'jik	agent that paralyzes the ciliary muscle and the powers of accommodation; commonly used in pediatric eye examinations
mydriatic mi-drē-at'ik	agent that causes dilation of the pupil; used for certain eye examinations
miotic mī-ot'ik	agent that causes the pupil to contract (<i>mio</i> = less)

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
contact lens	10.82 The plastic lens that the user fits over the cornea to correct refractive errors is called a
instillation, drop gtt irrigation	10.83 Introduction of a medicated solution in the eye is called an eye, usually administered by a (gt) or drops () in the affected eye or eyes. Washing the eye with water or other fluid is called eye
antibiotic ophthalmic	10.84 A solution composed of an antimicrobial agent in a fluid for treatment of bacterial eye infections is called an solution.
mydriatic	10.85 The term mydriasis means dilation of the pupil. A therapeutic drug that causes dilation of the pupil for an eye examination is called a agent.
miotic	10.86 In contrast, miosis means contraction of the pupil. A therapeutic drug that causes the pupil to contract is called a agent.
circle ciliary	10.87 <i>Cycl/o</i> is a combining form referring either to a or the body, a ring-like structure in the eye that contains

ANSWERS	REVIEW
	ciliary muscles. Recall from Chapter 8 that -plegia is a suffix meaning
paralysis	The term pertaining to an agent that paralyzes the
	ciliary muscle and powers of accommodation during some eye
cycloplegic	examinations, using the adjective form of <i>-plegia</i> , is

CHAPTER 10 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
IOL	intraocular lens
LASIK	laser-assisted in situ keratomileusis

CHAPTER 10 SUMMARY OF TERMS

The terms introduced in chapter 10 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

accommodation/491	blepharospasm /489
ă-kom'ŏ-dā'shŭn	<i>blef'ă-rō-spazm</i>
amblyopia/492	canal of Schlemm/485
am-blē-ō'pē-ă	kă-nal' of shlem
anterior chamber/484	cataract/492
an-tēr'ē-ŏr chām'bĕr	kat'ă-rakt
antibiotic ophthalmic solution/507	cataract extraction/503
an'tē-bī-ot'ik of-thal'mik sŏ-lū'shŭn	kat'ă-rakt ek-strak'shŭn
aphakia/492	chalazion /492
ă-fā'kē-ă	ka-lā'zē-on
aqueous humor/485	choroid/485
ak'wē-ŭs hyū'mŏr	kō'royd
asthenopia/489	ciliary body /485
as-thĕ-nō'pē-ă	sil'ē-ar-ē bod'ē
astigmatism/491	ciliary muscle /485
ă-stig'mă-tizm	sil'ē-ar-ē mŭs'ĕl
blepharitis/492	ciliary processes /485
blef'ă-rī'tis	sil'ē-ar-ē pros'es-ēz
blepharochalasis/492	cones/486
blef'ă-rō-kal'ă-sis	kōnz
blepharoplasty/503	conjunctiva/485
blef'ă-rō-plast-tē	kon-jŭnk-tī'vă
blepharoptosis/492	conjunctivitis /492
blef'ă-rop'tō-sis	kon-jŭnk-ti-vī'tis

contact lens/506

kon'takt lenz

cornea/485

kōr'nē-ă

cryopexy/503

krī'ō-pek-sē

cryoretinopexy/503

krī-ō-ret'i-nō-pek-sē

cycloplegic/507

sī-klō-plē'jik

dacryoadenitis/492

dak'rē-ō-ad-ĕ-nī'tis

dacryocystectomy/503

dak'rē-ō-sis-tek'tō-mē

dacryocystitis/492

dak'rē-ō-sis-tī'tis

dermatochalasis/492

der'mă-tō-kă-lā'sis

diabetic retinopathy/493

dī-ă-bet'ik ret-i-nop'ă-thē

diplopia/490

di-plō'pē-ă

distance visual acuity/499

dis'tănts vĭzh'yū-ăl ă-kyū'i-tē

ectropion/493

ek-trō'pē-on

entropion/493

en-trō'pē-on

enucleation/503

ē-nū-klē-ā'shŭn

epiphora/493

ē-pif'ō-ră

esotropia/496

es-ō-trō'pē-ă

exophthalmos or exophthalmus/490

ek-sof-thal'mos or ek-sof-thal'mus

exotropia/496

ek-sō-trō'pē-ă

eye instillation/506

ī in-sti-lā'shŭn

eye irrigation/507

ī ir'i-gā'shŭn

eyelid/485

ī' lid

fluorescein angiography/499

flōr-es'ē-in an-jē-og'ră-fē

fovea centralis/485

fō'vē-ă sen-trā'lis

fundus/485

fŭn'dŭs

glands of Zeis/485

glanz of tsīs

glaucoma/493

glaw-kō'mă

heterotropia/496

het'ĕr-ō-trō'pē-ă

hordeolum/493

hōr-dē'ō-lŭm

hyperopia/491

hī-pĕr-ō'pē-ă

intraocular lens (IOL) implant/504

in'tră-ok'yū-lăr lenz im'plant

iridectomy/503

ir'i-dek'tŏ-mē

iridotomy/504

ir-i-dot'ŏ-mē

iris/485

ī'ris

iritis/495

ī-rī'tis

keratitis/495

ker-ă-tī'tis

keratoplasty/504

ker'ă-tō-plas-tē

lacrimal ducts/485

lak'ri-măl dŭkts

lacrimal gland/485

lak'ri-măl gland

lacrimal sac/485

lak'ri-măl sak

lacrimation/490

lak-ri-mā'shŭn

laser surgery/504

lā'zĕr sŭr'jĕr-ē

laser-assisted in situ keratomileusis (LASIK)/504

lā'zĕr-ă-sis'tĕd in sī'tū ker'ă-tō-mī-lū'sis (lā'sik)

lens/485 lenz

lens capsule/486

lenz kap'sūl

macula/486

mak'yū-lă

macula lutea/486 mak'yū-lă lū'tĕ-ā

macular degeneration/495

mak'yū-lăr dē-jen-ĕr-ā'shŭn

meibomian glands/485

mī-bō'mē-ăn glanz

miotic/507

mī-ot'ik

mydriatic/507 mi-drē-at'ik

myopia/491 mī-ō'pē-ă

nasolacrimal duct/486

nā-zō-lak'ri-măl dŭkt

nystagmus/490 nis-tag'mŭs

ophthalmoscopy/501

of-thăl-mos'kŏ-pē

optic disk/486

op'tik disk

optic nerve/486

op'tik něrv

palpebra/485 pal-pē'bră

phacoemulsification/504 fak'ō-ē-mŭl-si-fi-kā'shŭn

photophobia/490

fō-tō-fō'bē-ă

posterior chamber/486

pos-tēr'ē-ōr chām'bĕr

presbyopia/491 prez-bē-ō'pē-ă

pseudophakia/495

sū-dō-fak'ē-ă

pterygium/495

tĕ-rij'ē-ŭm

ptosis/492

tō-sis

pupil/486

pyū'pĭl

refractive errors/491

rē-frak'tiv er'ōrz

retina/486

ret'i-nă

retinal detachment/495

ret'i-năl dē-tach'ment

retinitis/496

ret-i-nī'tis

rods/486

rodz

sclera/486

sklēr'ă

scleral buckling/504

sklēr'āl bŭk'ling

scleritis/496

sklĕ-rī'tis

scotoma/490

skō-tō'mă

slit lamp biomicroscopy/501

slit lamp bi'ō-mī-kros' kŏ-pē

sonography/501

sŏ-nog'ră-fē

strabismus/496

stra-biz'mŭs

tonometry/501

tō-nom'ĕ-trē

trabecular meshwork/486

tră-bek'yū-lăr mesh'wĕrk

trichiasis/496

tri-kī'ă-sis

vitreous/486

vit'rē-ŭs



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

epikeratophakia

epi / kerato / phak/ ia
P CF R S

DEFINITION: upon/cornea/lens/condition of

1.	blepharopto	sis	1	
		/	_	
	CF	S		
2.	iridotomy			
	CF	/S	_	
3.	ophthalmolo			
		S		
4.		/	_	
		S		
5.	dacryolithias		_/	
		R	S	
6.	lacrimal	/		
	R	S		
7.	photophobia	a /	_/	
		R	S	

17.	optometry	1		
	CF	S S		
	DEFINITION:			
18.	aphakia			
		_//		
	P	R	S	
	DEFINITION:			
19.	hyperopia	_/		
	P	S		
20.	scleromalac			
		_/		
		S		
	DEFINITION:			
Wri	te the letter	of the definition	that matches each	of the following refractive disorders:
21.	myopia		a.	loss of accommodation due to old age
22.	strabismus		b.	lazy eye
23.	presbyopia		c.	farsightedness
24.	astigmatism	·	d.	crossed eyes
25.	hyperopia		e.	distorted vision
26.	amblyopia		f.	nearsightedness
Con	nplete each r	medical term by v	writing the missing	part:
27.		_itis = inflammat	tion of the cornea	
28.		phobia = extreme sensitivity to light		
29.	. dacryoectomy = excision of a tear sac			
30.	ophthalmos = protrusion of the eyeball			eball
31.		_chalasis = baggy	y eyelids	
Brie	efly define th	e following med	ical terms:	
32.	entropion			
33.	diplopia			
34.	tonometer			
35.	ectropion			
36.	scotoma			

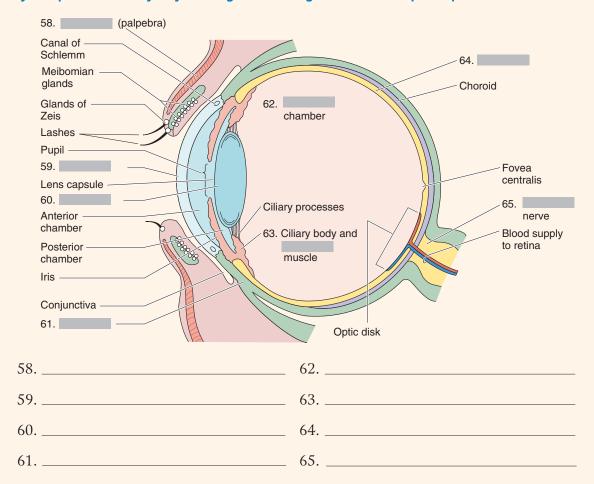
Write the correct medical term for each of the following definitions:

37	_ pinkeye
38	inflammation of the eyelid
39	_ eyestrain
40	agent that causes dilation of the pupil
41	absence of the lens of the eye
42	sty; acute infection of a meibomian gland of the eyelid
43	clouding of the lens causing decreased vision
44	breakdown or thinning of the tissues in the macula, resulting in partial or complete loss of central vision
45	involuntary contraction of the muscles surrounding the eye
46	involuntary, rapid oscillating movement of the eyeball
47	placement of a buckle-like band around the sclera to treat retinal detachment

Circle the combining form that corresponds to the meaning given:

48. eye	or/o	opt/o	ot/o
49. old age	presby/o	scler/o	phas/o
50. glassy	aque/o	vitre/o	hydr/o
51. light	phon/o	phot/o	opt/o
52. hard or sclera	corne/o	vitre/o	scler/o
53. lens (lentil)	phac/o	scler/o	conjunctiv/o
54. colored circle	chrom/o	irid/o	corne/o
55. tear	dacry/o	hydr/o	aque/o
56. eyelid	ocul/o	ophthalm/o	blephar/o
57. water	aque/o	hidr/o	vitre/o

Identify the parts of the eye by writing the missing words in the spaces provided:



For each of the following, circle the correct spelling of the term:

66. asthenopia	assthinopia	asthinopia
67. terigium	pterygium	pteregium
68. horadeolum	hordeolum	hordeaolum
69. nistagmis	nystagmis	nystagmus
70. chalazeon	shalazion	chalazion
71. mydriatic	midriatic	myadriatic
72. skotoma	scotoma	schotoma
73. epiphora	epifora	epifhora
74. dakryeocyst	dacryocyst	dacreyocyst
75. opthalmoscope	ofthalmoscope	ophthalmoscope

Give the noun that is used to form each adjective:

76. conjunctival	
77. myopic	
78. scleral	
79. macular	
80 exophthalmic	



MEDICAL RECORD ANALYSIS

Medical Record 10-1

PROGRESS NOTE

- S: This 51 y/o \circ c/o a growth in the corner of her right eye that is dry and irritated. She has had the feeling that there was "something in the eye" for about 4 months before actually noticing the growth three weeks ago. She wears contacts to correct farsightedness but has recently switched to eyeglasses because of the discomfort. She is active physically and loves tennis and water sports, but she does not frequently wear sunglasses.
- O: Inspection of the right eye reveals an inflamed, raised, whitish, triangular wedge of fibrovascular tissue, the base of which lies within the interpalpebral conjunctiva and the apex of which encroaches on the cornea. A photo documentation is made and included in the chart.
- A: INFLAMED PTERYGIUM, RIGHT EYE
- P: 1) The patient is advised that the pterygium is not dangerous, but that further growth could interfere with vision and warrant surgical excision. She was counseled on the importance of wearing UV blocking sunglasses and advised to avoid smoky or dusty areas as much as possible.
 - 2) RX: fluorometholone, 0.1% suspension, 1 gt q4h OD during the day for inflammation; OTC artificial tears solution, prn dryness/irritation
 - 3) RTO in 3 months for slit lamp evaluation, or sooner if symptoms persist.

QUESTIONS ABOUT MEDICAL RECORD 10-1

- 1. Describe the refractive error noted in the subjective information:
 - a. eyestrain
 - b. inflammation of the cornea
 - c. difficulty seeing distant objects
 - d. difficulty seeing close objects
 - e. blind spot in vision
- 2. Which action on the part of the patient likely contributed to the condition?
 - a. wearing contact lenses
 - b. removing contact lenses
 - c. playing tennis
 - d. not routinely wearing sunglasses
 - e. strenuous physical activity
- 3. Which ophthalmologic procedure is included in the plan?
 - a. use of laser to reshape the surface of the cornea
 - b. use of an ophthalmoscope to view the interior of the eye

- c. use of a tabletop microscope to examine the eye, especially the cornea
- d. implantation of an artificial lens
- e. use of a tonometer to measure the intraocular pressure
- 4. How should the fluorometholone be administered?
 - a. one drop every 4 hours
 - b. four drops in the eye every morning
 - c. one drop every day for 4 days
 - d. as needed during the day
 - e. one drop every other day for 4 days
- 5. When should the patient instill the artificial tears?
 - a. every day
 - b. every night
 - c. during the day
 - d. only as needed
 - e. when feeling the need to cry

- 6. What caused the pterygium?
 a. misdirected eyelashes that rub on the conjunctiva or cornea
 b. intraocular muscle imbalance
 c. separation of the retina from the under-

 - lying epithelium d. abnormal overflow of tears

 - e. ultraviolet exposure and drying

- 7. What was the patient told about the pterygium?
 - a. it is cancerous
 - b. it is not cancerous
 - c. it must be removed
 - d. both a and c
 - e. none of the above

Medical Record 10-2

FOR ADDITIONAL STUDY

Not long ago, Cassandre Aquero had cataract surgery for her left eye and is now losing vision in her right eye because of another cataract. She is consulting an ophthalmologist, Dr. Oanh Tran, about surgery on the right eye. Medical Record 10-2 is the history and physical examination written by Dr. Tran in planning for her surgery.

Read Medical Record 10-2 (pages 520-521), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 10-2

1.	The following are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define each term below.
	appendectomy
	irides
2.	In your own words, briefly describe Ms. Aquero's current complaint and diagnosis as noted under "History of Present Illness:"
3.	Describe, in lay language, the two medical conditions that Ms. Aquero has in addition to her current problem and past surgeries:
4.	Which of the following findings on physical examination is related to Ms. Aquero's general medical condition in addition to her eye problems?
	a. rales on auscultation
	b. disoriented consciousness
	c. BP 180/100
	d. weight 135 lb.
5.	The planned operation involves several risks that the patient has accepted in the hopes of regaining good eyesight. Which of the following was <i>not</i> mentioned by Dr. Tran as a risk?
	a. hypertensive crisis
	b. retinal detachment
	c. edema of the macula
	d. bleeding

5.	The preoperative nursing staff will ensure that Ms. Aquero receives five medications before surgery. Translate the instructions for these:
	a
	b
	c
	d
	e
7.	In your own words, not using medical terminology, briefly describe what will occur in the surgery:

Medical Record 10-2: For Additional Study

CENTRAL MEDICAL GROUP, INC.

Department of Ophthalmology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

HISTORY

HISTORY OF PRESENT ILLNESS:

This 57-year-old female complains of progressive loss of vision in the right eye over the last two years which has been diagnosed as a cataract. The patient recently underwent cataract surgery in the left eye and is currently scheduled for surgery in the right eye due to her decreased vision.

PAST MEDICAL HISTORY:

The patient has had the normal childhood diseases and has essential hypertension and hypothyroidism.

SURGERIES: Appendectomy 40 years ago. Tonsillectomy and adenoidectomy as a child. Cataract surgery in the left eye with a posterior chamber lens implant in 199x.

ALLERGIES: None.

MEDICATIONS: Propranolol 80 mg b.i.d. Hydrochlorothiazide 50 mg b.i.d. Clonidine, 0.1 mg, 2 tablets p.o. t.i.d. Synthroid 0.1 mg q.d. Slow-K 2 tablets p.o. q.d.

PHYSICAL EXAMINATION

VITAL SIGNS:

WEIGHT: 135 lb. BLOOD PRESSURE: 180/100.

HEENT:

HEAD, EARS, EYES, NOSE, THROAT: Normal.

EYES: Best corrected visual acuity in the right eye is counting fingers at two feet and 20/50 in the left eye. Pinhole vision in the left eye is 20/30. Slit lamp examination reveals normal lids, conjunctivae, and sclerae. Corneas are clear. Anterior chambers are clear and deep. Irides are within normal limits in the right eye. Evaluation of the lens reveals a 4+ posterior subcapsular plaquing with 3-4+ nuclear sclerosis, and in the left eye, there is a posterior chamber lens that is in place with posterior lens capsular plaquing. Intraocular pressure: OD: 18. OS: 17. Fundus examination in the right eye was severely hindered due to the dense cataract. However, evaluation of the posterior pole in the right eye was within normal limits.

(continued)

HISTORY AND PHYSICAL Page 1

AOUERO, CASSANDRE D. PT. NAME: 008654 ID NO:

ATT PHYS: O. TRAN, M.D.

Medical Record 10-2: For Additional Study (Continued)

CENTRAL MEDICAL GROUP, INC.

Department of Ophthalmology

201 Medical Center Drive · Central City, US 90000-1234 · PHONE: (012) 125-8888 · FAX: (012) 125-3434

PHYSICAL EXAMINATION

CHEST:

Clear to percussion and auscultation. The breasts were normal, and the lungs were clear.

PELVIC/RECTAL:

Within normal limits.

EXTREMITIES:

Within normal limits.

NEUROLOGICAL:

Within normal limits.

IMPRESSION:

- 1) Cataract, right eye.
- 2) Pseudophakia, left eye.
- 3) Essential hypertension.
- 4) Hypothyroidism.

RISKS/BENEFITS:

The patient is aware of the alternatives, risks, benefits, and possible complications of the procedure that include hemorrhage, infection, loss of vision, reoperation, retinal detachment, macular edema; and the patient still desires to undergo the procedure.

PLAN:

Extracapsular cataract extraction with posterior chamber lens implant under local anesthesia using a +21 diopter posterior chamber lens with the ultraviolet filter. Preoperative medication will consist of the patient's morning dose of Propranolol, 80 mg; Hydrochlorothiazide, 50 mg; Clonidine, 0.2 mg; and Diamox, 250 mg with ¼ glass of water at approximately 10 a.m. on the day of surgery. The patient was also instructed to take Maxitrol, 1 gt OD, q 3 h starting 24 hours prior to the procedure, while awake.

O. Tran. M.D.

OT:mk

D: 10/19/20xx T: 10/20/20xx

HISTORY AND PHYSICAL

Page 2

PT. NAME:

AQUERO, CASSANDRE D.

ID NO:

008654

ATT PHYS:

O. TRAN, M.D.

ANSWERS TO PRACTICE EXERCISES

1. blepharo/ptosis

CF

S

eyelid/falling or downward displacement

2. irido/tomy

CF S

iris/incision

3. ophthalmo/logy

CF

eye/study of

4. vitr/ectomy

R

glassy/excision or removal

5. dacryo/lith/iasis

CF

R S tear/stone/formation or presence of

6. lacrim/al

R

tear/pertaining to

7. photo/phob/ia

CF

R

light/sensitivity/ condition of

8. kerato/plasty

CF

cornea/surgical repair or reconstruction

9. aque/ous

R

water/pertaining to

10. ir/itis

RS

iris/inflammation

11. corne/al

R

cornea/pertaining to

12. phaco/lysis

CF

lens (lentil)/breaking down or dissolution

13. retino/path/y

CF

R S

retina/disease/condition or process of

14. ocul/ar

R S

eye/pertaining to

15. conjunctiv/itis

conjunctiva (to join together)/inflammation

16. presby/opia

old age/condition of vision

17. opto/metry

CF S

eye/process of measuring

18. a/phak/ia

P R S

without/lens (lentil)/ condition or process of

19. hyper/opia

Р S

above or excessive/ condition of vision

20. sclero/malacia

CF S

sclera/softening

- 21. f
- 22. d
- 23. a
- 24. e
- 25. c
- 26. b
- 27. keratitis
- 28. photophobia
- 29. dacryocystectomy
- 30. exophthalmos
- 31. blepharochalasis or dermatochalasis
- 32. inward turning of the rim of the eyelid
- 33. double vision
- 34. instrument to measure intraocular pressure
- 35. outward turning of the rim of the eyelid
- 36. blind spot in vision
- 37. conjunctivitis
- 38. blepharitis

- 39. asthenopia
- 40. mydriatic
- 41. aphakia
- 42. hordeolum
- 43. cataract
- 44. macular degeneration
- 45. blepharospasm
- 46. nystagmus
- 47. scleral buckling
- 48. opt/o
- 49. presby/o
- 50. vitre/o
- 51. phot/o
- 52. scler/o
- 53. phac/o
- 54. irid/o
- 55. dacry/o
- 56. blephar/o
- 57. aque/o
- 58. eyelid
- 59. cornea
- 60. lens
- 61. sclera
- 62. vitreous
- 63. ciliary
- 64. retina
- 65. optic
- 66. asthenopia
- 67. pterygium
- 68. hordeolum 69. nystagmus
- 70. chalazion
- 71. mydriatic
- 72. scotoma
- 73. epiphora
- 74. dacryocyst 75. ophthalmoscope
- 76. conjunctiva
- 77. myopia
- 78. sclera
- 79. macula
- 80. exophthalmos or exophthalmus

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 10-1: Progress Note

1. d 2. d 3. c 4. a 5. d 6. e 7. b

Medical Record 10-2: For Additional Study

See CD-ROM for answers.





✓ Chapter 11 Checklist	LOCATION
☐ Read Chapter 11: The Ear and complete all programmed review segments.	pages 525-543
 Review the starter set of flash cards and term components related to Chapter 11. 	back of book
☐ Complete the Chapter 11 Practice Exercises and Medical Record Analysis 11-1.	pages 546-550
☐ Complete Medical Record Analysis 11-2 For Additional Study.	pages 551-556
☐ Complete the Chapter 11 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 11 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 11 terms.	CD-ROM

OVERVIEW OF THE EAR

The three divisions of the ear function to provide the sense of hearing (Fig. 11-1):

- The **external ear**, from the pinna (or auricle), gathers sounds, which funnel through the external auditory canal.
- Sounds reach the tympanum, or eardrum, in the **middle ear**. The tympanum transmits sound vibrations to the auditory ossicles (the malleus, incus, and stapes) and to the oval window, which stimulates the auditory fluids in the inner ear. Also in the middle ear, the eustachian tube connects with the throat to maintain equal air pressure.
- The **inner ear**, also known as the labyrinth, receives sound vibrations and passes them through intricate, intercommunicating tubes and chambers to the organ of Corti, where nerve impulses are generated and transmitted to the brain for processing.

The inner ear (labyrinth) also helps to maintain the body's equilibrium by stimulating nerve impulses resulting from movement or changes in position.

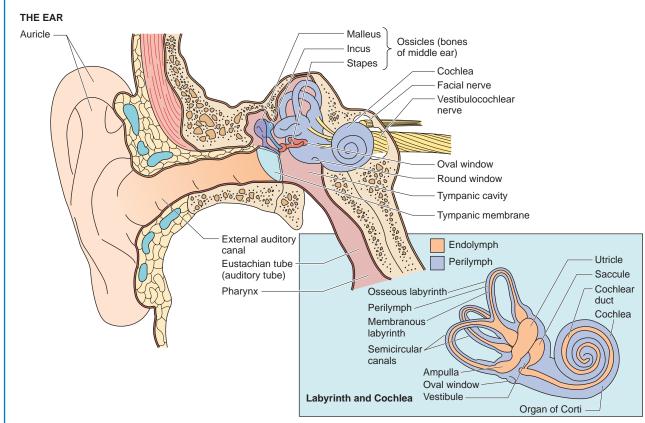


FIGURE 11-1 Anatomy of the ear.



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
acous/o, audi/o	hearing
aer/o	air or gas
aur/i, ot/o	ear
cerumin/o	wax
salping/o	eustachian tube or uterine tube
tympan/o, myring/o	eardrum
-acusis (suffix)	hearing condition



Programmed Review: Combining Forms

ANSWERS	REVIEW	
	11.1 The two combining forms for hearing are used in many	
	everyday words in addition to medical terms. People speak of the	
	acoustics of a room, for example, and of audible noises. These two	

ANSWERS	REVIEW
acous/o, audi/o -acusis -metry audiometry	combining forms are and Related to the combining form <i>acous/o</i> is the suffix for a hearing condition: The term presbyacusis, for example, means hearing loss because of old age. Recall that the suffix meaning process of measuring is The medical process of measuring a person's hearing, using the other combining form, is
aer/o anaerobe	11.2 The combining form for air or gas is This combining form is used in many medical terms. An aerobe, for example, is a microbe that lives in the presence of air, whereas a microbe that lives without air (formed with the prefix meaning without) is an
ot/o otologist ear	11.3 The two combining forms for ear are <i>aur/i</i> and The medical study of the ear is called otology. The physician who specializes in the study and treatment of the ear is an Otology is a subspecialty of otorhinolaryngology (otolaryngology), involving the study and treatment of the, nose, and throat (more commonly known as ENT).
aur/i	11.4 The other combining form meaning ear is The auricle, for example, is the outer, visible part of the ear.
cerumin/o -osis ceruminosis	11.5 The combining form referring to ear wax comes from the Latin word cera, meaning wax. That combining form is Recall that the suffix meaning condition or increase is; therefore, the term for a condition of excessive ear wax is
salping/o salpingitis	11.6 The combining form for the eustachian tube (or uterine tube) comes from the Greek word salpinx, meaning trumpet. That combining form is Using the common suffix for inflammation, the medical term for inflammation of the eustachian tube in the ear or uterine tube is The context in which the term is used is key to knowing which meaning is appropriate.
	11.7 A kind of drum used in symphony orchestras is called a tympany, from the Greek word for drum. The combining form for

ANSWERS	REVIEW	
tympan/o	the eardrum is Recall that the suffix for surgical	
-tomy	incision is An incision into the eardrum is therefore	
tympanotomy	called a	
	11.8 A second combining form for eardrum comes from the Latin	
	word for drum membrane: myringa. That combining form is	
myring/o	Recall that the suffix for surgical excision is	
-ectomy	Combine these term components to create the	
myringectomy	medical term for the excision of the eardrum:	

Self-Instruction: Anatomic Terms

Study the following:

TERM	MEANING
external ear eks-tĕr'năl ēr	outer structures of the ear that collect sound
pinna pin'ă	auricle (little ear); projected part of the external ear (pinna = feather)
external auditory meatus or canal eks-tĕr'năl aw'di-tōr-ē mē-ā'tŭs or kă-nal'	external passage for sounds collected from the pinna to the tympanum
cerumen sĕ-rū'men	a waxy substance secreted by glands located throughout the external canal
middle ear mid'ěl ēr	structures in the middle of the ear that vibrate sound from the tympanic membrane to the inner ear
tympanic membrane (TM) (see Fig. 11-3, B) tim-pan'ik mem'brān	eardrum; drum-like structure that receives sound collected in the external auditory canal and amplifies it through the middle ear
malleus mal'ē-йs	hammer; first of the three auditory ossicles of the middle ear
incus ing'kŭs	anvil; middle of the three auditory ossicles of the middle ear
stapes stā'pēz	stirrup; last of the three auditory ossicles of the middle ear
eustachian tube yū-stā'shǎn tūb auditory tube aw'di-tōr-ē tūb	tube connecting the middle ear to the pharynx (throat)

TERM	MEANING
oval window ō' val win'dō	membrane that covers the opening between the middle ear and inner ear
inner ear in'ĕr ēr labyrinth lab'i-rinth	intricate, fluid-filled, intercommunicating bony and membranous passages that function in hearing by relaying sound waves to auditory nerve fibers on a path to the brain for interpretation; also sense body movement and position to maintain balance and equilibrium (<i>labyrinth</i> = maze)
cochlea kok'lē-ă	coiled tubular structure of the inner ear that contains the organ of Corti (<i>cochlea</i> = snail)
perilymph per'i-limf	fluid that fills the bony labyrinth of the inner ear
endolymph en'dō-limf	fluid within the membranous labyrinth of the inner ear
organ of Corti ōr'gan of kōr'tē	structure located in the cochlea; contains receptors (hair cells) that receive vibrations and generate nerve impulses for hearing
vestibule ves'ti-byūl	middle part of the inner ear, in front of the semicircular canals and behind the cochlea, that contains the utricle and the saccule; functions to provide body balance and equilibrium
utricle ū'tri-kĕl	the larger of two sacs within the membranous labyrinth of the vestibule in the inner ear (<i>uter</i> = leather bag)
saccule sak'yūl	the smaller of two sacs within the membranous labyrinth of the vestibule in the inner ear (<i>sacculus</i> = small bag)
semicircular canals sem'ē-sĕr'kyū-lar kă-nalz'	three canals within the inner ear that contain specialized receptor cells that generate nerve impulses with body movement



Programmed Review: Anatomic Terms

ANSWERS	REVIEW
	11.9 The outer, projecting part of the external ear is called the
pinna	auricle or The plural form of this term is
pinnae	The adjective form is pinnal.
external	11.10 Sound waves travel from the pinna through the
auditory	canal toward the eardrum. Glands along this
cerumen	canal secrete a waxy substance called
tympanum	11.11 The tympanic membrane, or, is
	the beginning of the middle ear. Also called the eardrum, this
	structure amplifies sounds into the middle ear.



Self-Instruction: Symptomatic Terms

Study the following:

TERM	MEANING
otalgia ō-tal'jē-ă otodynia ō-tō-din'ē-ă	earache
otorrhagia ō-tō-rā'jē-ă	bleeding from the ear
otorrhea ō-tō-rē'ă	purulent drainage from the ear
tinnitus tin'i-tŭs	a jingling; a ringing or buzzing in the ear
vertigo vĕr'ti-gō	a turning round; dizziness



Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
ear pain otalgia	11.20 The combining form <i>ot/o</i> means Recall that the suffix <i>-algia</i> means Thus, the term for ear pain, or an earache, is
bleeding or to burst forth otorrhagia	11.21 The suffix <i>-rrhagia</i> means The term for bleeding from the ear is
-rrhea otorrhea	11.22 Recall that the symptomatic suffix meaning discharge is The term for a purulent drainage (discharge) from the ear is
tinnitus	11.23 The Latin word tinnitus means to jingle. The symptom of hearing a jingling, ringing, or buzzing sound in the ear is
vertigo	11.24 The Latin word vertigo means dizziness or turning around. The symptom of feeling that one is turning around, or feeling dizzy, is called



Self-Instruction: Diagnostic Terms

Study the following:

TERM	MEANING	
EXTERNAL EAR		
otitis externa (Fig. 11-2, B) ō-tī'tis eks-tĕr'nă	inflammation of the external auditory meatus (canal)	
cerumen impaction sĕ-rū'men im-pak'shŭn	excessive buildup of wax in the ear that often reduces hearing acuity, especially in elderly persons	
MIDDLE EAR		
myringitis mir-in-jī'tis tympanitis tim-pă-nī'tis	inflammation of the eardrum	
otitis media (Fig. 11-3, C) ō-tī'tis mē'dē-ă	inflammation of the middle ear	
aerotitis media ār-o-tī'tis mē'dē-ă	inflammation of the middle ear from changes in atmospheric pressure; often occurs with frequent air travel	
eustachian obstruction yū-stā'shǎn ob-strŭk'shŭn	blockage of the eustachian tube, usually as a result of infection, as in otitis media	
otosclerosis ō'tō-sklĕ-rō'sis	hardening of the bony tissue in the ear	

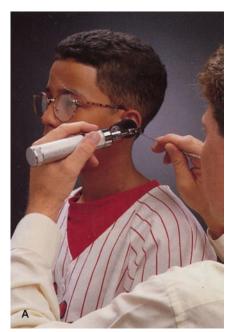




FIGURE 11-2 A. Otoscopic examination of the external auditory meatus (canal). B. Otitis externa.

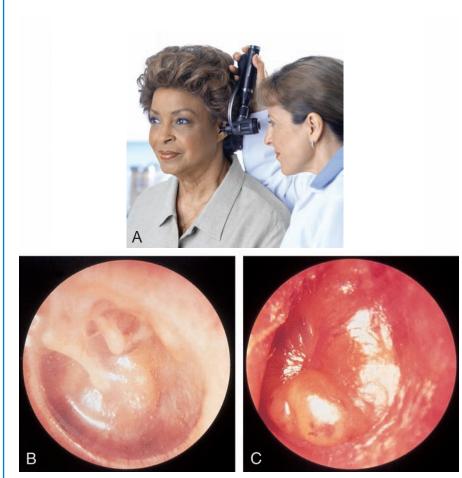


FIGURE 11-3 ■ A. Doctor performing pneumatic otoscopy. B. Normal tympanic membrane. C. Otitis media.

TERM	MEANING	
INNER EAR		
acoustic neuroma ă-kūs'tik nū-rō'mă	benign tumor on the auditory nerve (8th cranial nerve) that causes vertigo, tinnitus, and hearing loss	
labyrinthitis lab'i-rin-thī'tis	inflammation of the labyrinth (inner ear)	
Ménière disease mĕn-yār' di-zēz'	disorder of the inner ear resulting from an excessive buildup of endolymphatic fluid, causing episodes of vertigo, tinnitus, nausea, vomiting, and hearing loss; one or both ears can be affected, and attacks vary in both frequency and intensity (named after Prosper Ménière, the French physician who first described the condition)	
GENERAL		
deafness def'nes	general term for partial or complete loss of hearing	
conductive hearing loss kon-dŭk'tiv hēr'ing los	hearing impairment caused by interference with sound or vibratory energy in the external canal, middle ear, or ossicles	

TERM	MEANING
sensorineural hearing loss sen'sōr-i-nūr'ăl hēr'ing los	hearing impairment caused by lesions or dysfunction of the cochlea or auditory nerve
mixed hearing loss mikst hēr'ing los	combination of sensorineural and conductive hearing loss
presbyacusis prez'bē-ă-kū'sis presbycusis prez-bē-kū'sis	hearing impairment in old age

Programmed Review: Diagnostic Terms

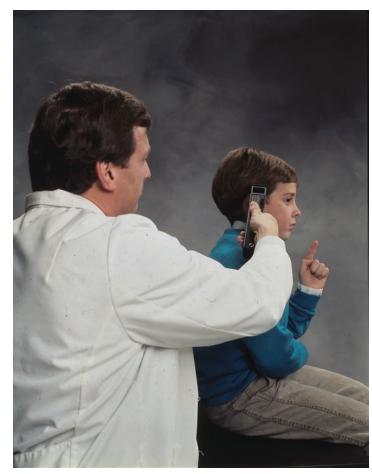
ANSWERS	REVIEW
-itis myringitis tympanitis	11.25 Recall that the suffix for inflammation is Using the two different combining forms meaning eardrum, two terms for an inflamed tympanic membrane are and
otitis externa otitis media inflammation labyrinthitis	11.26 There are three different types of otitis, depending on whether the inflammation is in the external ear, middle ear, or inner ear. Inflammation of the external auditory meatus (canal) is termed, and inflammation of the middle ear is termed Otitis interna, or of the inner ear, is more commonly known as inflammation of the labyrinth, or
aerotitis media	11.27 Using the combining forms for both air and ear, the term for inflammation of the middle ear from changes in atmospheric pressure is
cerumen impaction	11.28 Ear wax can build up in the external auditory canal and become impacted. This condition of excessive ear wax is called
eustachian obstruction	11.29 A middle ear infection, such as otitis media, may cause a blockage of the eustachian tube, which is called a This condition is common in young children when the tube is small and easily obstructed.
increase otosclerosis	11.30 The combining form for <i>scler/o</i> means hard. Recall that the suffix <i>-osis</i> means condition or The medical term for the hardening (increased hardness) of bony tissue in the ear is therefore called

ANSWERS	REVIEW
hearing pertaining to acoustic neuroma	11.31 The two-word term describing a benign tumor on the auditory nerve (8th cranial nerve) that causes vertigo, tinnitus, and hearing loss is formed by combining <i>acous/o</i> , the combining form meaning, and -ic, the suffix meaning, along with neur/o, the combining form meaning nerve and the suffix for tumor:
tinnitus vertigo Ménière	11.32 Ringing in the ear, or, and dizziness, or, along with vomiting, nausea, and hearing loss are symptoms of an inner ear disorder resulting from an excessive buildup of endolymphatic fluid called disease (named for the French physician who first described the condition).
deafness	11.33 The general term for partial or complete hearing loss is, which is often called hearing impairment or hearing disabled. Hearing loss can be caused by mechanical factors that interfere with the transmission of sound vibrations through the external and middle ears. This is called hearing loss. The term for hearing loss caused by dysfunction of
sensorineural mixed	the cochlea or auditory nerve is formed using combining forms referring to the senses and nerves: hearing loss. A combination of sensorineural and conductive hearing loss is known as hearing loss.
hearing condition presbyacusis presbycusis	11.34 The suffix -acusis means Because the combining form presby/o means old age, the term for hearing impairment in old age is The shortened form of this term is

Self-Instruction: Diagnostic Tests and Procedures

Study the following:

TEST OR PROCEDURE	EXPLANATION
audiometry (Fig. 11-4) aw-dē-om'ĕ-trē	process of measuring hearing
audiometer aw-dē-om'ĕ-ter	instrument to measure hearing



Audiometry: hearing screening.

TEST OR PROCEDURE

audiogram aw'dē-ō-gram

audiologist aw-dē-ol'ō-jist

auditory acuity testing aw'di-tōr-ē ă-kyū'i-tē test'ing

tuning fork (Fig. 11-5) tū'ning fork

brainstem auditory evoked potential (BAEP) (Fig. 11-6)

brān'stem aw'di-tōr-ē ē-vōkt' pō-ten'shăl

brainstem auditory evoked response (BAER)

brān'stem aw'di-tōr-ē ē-vōkt' rē-spons'

otoscopy (see Fig. 11-2) ō-tos'kŏ-pē

EXPLANATION

record of hearing measurement

health professional who specializes in the study of hearing impairments

physical assessment of hearing; useful in differentiating between conductive and sensorineural hearing loss a two-pronged, fork-like instrument that vibrates when struck; used to test hearing, especially bone conduction electrodiagnostic testing that uses computerized equipment to measure involuntary responses to sound within the auditory nervous system; commonly used to assess hearing in newborns

use of an otoscope to examine the external auditory canal and tympanic membrane

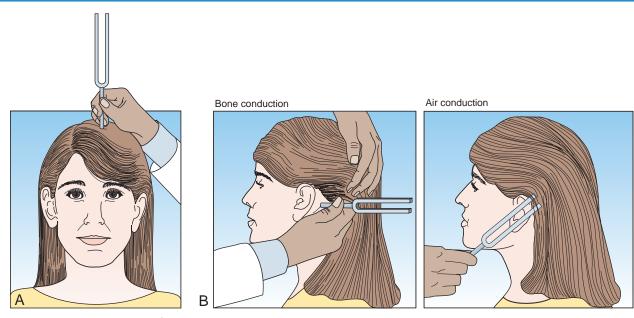


FIGURE 11-5 Tuning fork testing. A. Webber test. B. Rinne test.

TEST OR PROCEDURE	EXPLANATION
pneumatic otoscopy (see Fig. 11-3, A) nū-mat'ik ō-tos'kŏ-pē	otoscopic observation of the tympanic membrane as air is released into the external auditory meatus; immobility indicates the presence of middle ear effusion (fluid buildup), as occurs as a result of otitis media
tympanometry tim'pă-nom'ĕ-trē	measurement of the compliance and mobility (conductibility) of the tympanic membrane and ossicles of the middle ear by monitoring the response to external airflow pressures



FIGURE 11-6 Brainstem auditory evoked potentials (BAEP) testing of a newborn.



Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
-metry audiometry	11.35 Recall that the suffix referring to the process of measuring is Thus, the term for the process of measuring hearing is
-meter audiometer	11.36 The suffix for an instrument for measuring is Thus, the term for an instrument that measures hearing is
-gram audiogram	11.37 The suffix meaning a record is Thus, the term for a record of hearing measurement is
-logist	11.38 The suffix for someone who specializes in the study or treatment of a certain subject area is Thus, the term for a health professional who specializes in the study of hearing impairments is an
-metry eardrum tympanometry	11.39 Again, the suffix for the process of measuring is <i>Tympan/o</i> is the combining form for (also called the tympanum). The process of measuring the compliance and mobility (conductibility) of the tympanic membrane is called This test may be used to help diagnose hearing loss.
auditory acuity middle sensorineural	11.40 A physical assessment of hearing that differentiates between conductive and sensorineural hearing loss is called testing. A conductive hearing loss is usually caused in the external or ear, whereas a hearing loss involves a problem in the cochlea or auditory nerve.
tuning fork bone	11.41 The vibrating device that is used in acuity testing is a One test uses it to assess the conduction of vibration through
	11.42 The electrodiagnostic test using computerized equipment to measure involuntary responses to sound within the auditory nervous system, such as commonly used to assess

1

Self-Instruction: Operative Terms

Study the following:

TERM	MEANING
microsurgery mī-krō-sǔr'jĕr-ē	surgery with the use of a microscope used on delicate tissue, such as the ear
myringotomy mir-in-got'ŏ-mē tympanostomy (Fig. 11-7) tim-pan-os'tŏ-mē	incision into the eardrum, most often for insertion of a small polyethylene (PE) tube to keep the canal open and prevent fluid buildup, such as occurs in otitis media
otoplasty ō'tō-plas-tē	surgical repair of the external ear



FIGURE 11-7 View through otoscope shows placement of tympanostomy tube.

~	

TERM	MEANING
stapedectomy stā-pĕ-dek'tō-mē	excision of the stapes to correct otosclerosis
tympanoplasty tim'pă-nō-plas-tē	vein graft of a scarred tympanic membrane to improve sound conduction

Programmed Review: Operative Terms

ANSWERS	REVIEW		
-plasty otoplasty	11.44 Recall that the suffix for surgical repair or reconstruction is A surgeon might repair the external ear after trauma, for example. This is called an		
tympanoplasty	11.45 A surgical repair of the tympanic membrane is a This may include a graft to a scarred membrane to improve sound conduction.		
microsurgery	11.46 Many of the ear's internal structures are small and delicate, and surgery must be performed using a microscope. This type of surgery is called		
otitis media tomy stomy	11.47 Small children often have middle ear infections, which are called To drain fluids from the middle ear, small tubes are often inserted into the eardrum after a surgical incision through the eardrum. There are two terms that describe this procedure. One, using the suffix for incision, is myringo The other, using the suffix describing the creation of an opening, is tympano		
v			
-ectomy otosclerosis stapedectomy	11.48 The suffix meaning excision is For the condition of hardening of the bony tissue of the ear,, the stapes may be excised to correct the hearing problem. This procedure is called a		
ossicles or bones middle	The stapes is the last of the three auditory in the ear.		

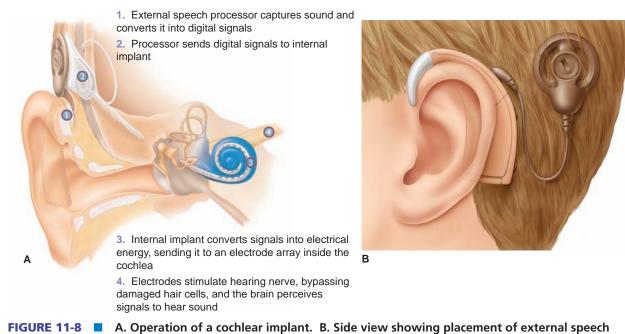


Self-Instruction: Therapeutic Terms

Study the following:

TERM	MEANING
auditory prosthesis aw'di-tōr-ē pros'thē-sis	any internal or external device that improves or substitutes for natural hearing
hearing aid hēr'ing ād	an external amplifying device designed to improve hearing by more effective collection of sound into the ear
cochlear implant (Fig. 11-8) kok'lē-ăr im'plant	an electronic device implanted in the cochlea that provides sound perception to patients with severe or profound sensorineural (nerve) hearing loss in both ears
ear lavage ēr lă-vahzh'	irrigation of the external ear canal, often to remove excessive buildup of cerumen
ear instillation ēr in-sti-lā'shŭn	introduction of a medicated solution into the external canal, usually administered by drop (gt) or drops (gtt) in the affected ears

	affected ears		
COMMON THERAPEUTIC DRUG CLASSIFICATIONS			
antibiotic an'tē-bī-ot'ik	a drug that inhibits the growth of or destroys microorganisms; used to treat diseases caused by bacteria (e.g., otitis media)		
antihistamine an-tē-his'tă-mēn	a drug that blocks the effects of histamine		
histamine his'tă-mēn	a regulatory body substance released in allergic reactions, causing swelling and inflammation of tissues; seen in hay fever and urticaria (hives)		



processor.

TERM	MEANING
antiinflammatory an'tē-in-flam'ă-tō-rē	a drug that reduces inflammation
decongestant dē-kon-jes'tant	a drug that reduces congestion and swelling of membranes, such as those of the nose and eustachian tube in an infection

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
auditory prosthesis hearing aid cochlear	artificial replacement for a diseased or missing body part. The term used to refer to any device that is used to improve or substitute for natural hearing is an The external amplifying device designed to improve hearing by more effective collection of sound into the ear is called a The electronic device implanted in the cochlea that provides sound perception to patients with severe or profound sensorineural (nerve) hearing loss in both ears is called a implant.
lavage cerumen impaction	11.50 The Latin term lavo means to wash. The process by which a cavity or organ is washed out by irrigating it with water or other fluid is called lavage. The external ear canal is often irrigated to remove buildup of cerumen in a process called ear An excessive buildup of earwax is called
instillation drop, gtt	11.51 The administration of a medicated solution into the ear's external canal is an ear, usually introduced by (gt) or drops () in the affected ear or ears.
histamine antihistamine against	11.52 A substance in the body that is released during allergic reactions and that causes swelling and inflammation of tissues is called A drug that acts to inhibit the effects of histamine is an The prefix <i>anti-</i> means or opposed to.
antiinflammatory	11.53 Similarly, a drug that reduces inflammation is an

ANSWERS	REVIEW
antibiotic	11.54 The same prefix joined with the combining form for life (<i>bio</i>) denotes a drug class that kills or inhibits microbial life. This type of drug is called an
not decongestant	11.55 The prefix <i>de-</i> means from, down, or A drug that is given to reduce congestion, such as may occur in the eustachian tube during an infection, is a

CHAPTER 11 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
BAEP	brainstem auditory evoked potential
BAER	brainstem auditory evoked response
ENT	ear, nose, and throat
PE	polyethylene
TM	tympanic membrane

CHAPTER 11 SUMMARY OF TERMS

The terms introduced in chapter 11 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

acoustic neuroma/533	auditory acuity testing/536		
ă-kūs'tik nū-rō'mă	aw'di-tōr-ē ă-kyū'i-tē test'ing		
aerotitis media/532	auditory prosthesis/541		
ār-ō-tī'tis mē'dē-ă	aw'di-tōr-ē pros'thē-sis		
antibiotic/541	auditory tube/528		
an'tē-bī-ot'ik	aw'di-tōr-ē tūb		
antihistamine/541 an-tē-his'tă-mēn	brainstem auditory evoked potential (BAEP)/536		
antiinflammatory/542	brān'stem aw'di-tōr-ē ē-vōkt'		
an'tē-in-flam'ă-tō-rē	pō-ten'shăl		
audiogram/536	brainstem auditory evoked		
aw'dē-ō-gram	response (BAER)/536		
audiologist/536	brān'stem aw'di-tōr-ē ē-vōkt'		
aw-dē-ol'ō-jist	rē-spons'		
audiometer/535	cerumen /528		
aw-dē-om'ĕ-ter	sĕ-rū'men		
audiometry/535	cerumen impaction/532		
aw-dē-om'ĕ-trē	sĕ-rū'men im-pak'shŭn		

cochlea/529

kōk'lē-ă

cochlear implant/541

kōk'lē-ăr im'plant

conductive hearing loss/533

kon-dŭk'tiv hēr'ing los

deafness/533

def'nes

decongestant/542

dē-kon-jes'tant

ear instillation/541

ēr in-sti-lā'shŭn

ear lavage/541 ēr lă-vahzh'

endolymph/529

en'dō-limf

eustachian obstruction/532

yū-stā' shăn ob-strŭk'shŭn

eustachian tube/528

yū-stā'shăn tūb

external auditory meatus or

canal/528

eks-tĕr'năl aw'di-tōr-ē mē-ā'tŭs or

kă-nal'

external ear/528

eks-tĕr'năl ēr

hearing aid/541

hēr'ing ād

histamine/541

his'tă-mēn

incus/528

ing'kŭs

inner ear/529

in'ĕr ēr

labyrinth/529

lab'i-rinth

labyrinthitis/533

lab'i-rin-thī'tis

malleus/528

mal'ē-ŭs

Ménière disease/533

mĕn-yār' di-zēz'

microsurgery/539

mī-krō-sŭr'jĕr-ē

middle ear/528

mid'ĕl ēr

myringitis/532

mir-in-jī'tis

mixed hearing loss/534

mikst hēr' ing los

myringotomy/539

mir-in-got'ŏ-mē

organ of Corti/529

ōr'gan of kōr'tē

otalgia/531

ō-tal'jē-ă

otitis externa/532

ō-tī'tis eks-tĕr'nă

otitis media/532

ō-tī'tis mē'dē-ă

otodynia/531

ō-tō-din'ē-ă

otoplasty/539

ō'tō-plas-tē

otorrhagia/531

ō-tō-rā'jē-ă

otorrhea/531

ō-tō-rē'ă

otosclerosis/532

ō'tō-sklē-rō'sis

otoscopy/536

ō-tos'kŏ-pē

oval window/529

ō'val win'dō

perilymph/529

per'i-limf

pinna/528

pin'ă

pneumatic otoscopy/537

nū-mat'ik ō-tos'kŏ-pē

presbyacusis/534

prez' bē-ă-kū' sis

presbycusis/534

prez-bē-kū'sis

saccule/529

sak'yūl

semicircular canals/529

sem'ē-sĕr'kyū-lar ka-nălz'

sensorineural hearing loss/534

sen'sōr-i-nūr'ăl hēr'ing los

stapedectomy/540

stā-pĕ-dek'tŏ-mē

stapes/528

stā'pēz

tinnitus/531

tin'i-tŭs

tuning fork/536

tū'ning fōrk

tympanic membrane (TM)/528

tim-pan'ik mem'brān

tympanitis/532

tim-pă-nī'tis

tympanometry/537

tim'pă-nom'ĕ-trē

tympanoplasty/540

tim'pă-nō-plas-tē

tympanostomy/539

tim'pan-os'tŏ-mē

utricle/529

ū'tri-kĕl

vertigo/531

vĕr'ti-gō

vestibule/529

ves'ti-byūl



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

macrotia

 $\frac{macr/ot/ia}{P}$ R S

DEFINITION: large or long/ear/condition of

			U	O		
1.	aerotitis					
		/	_/			
		R				
0						
2.	otorrhea					
		/	-			
	CF	S				
	DEFINITION:				 	
3.	myringoplast	y				
		/				
	CF		-			
1	acoustic				 	
4.		,				
		/	-			
	R					
	DEFINITION:				 	
5.	ceruminolysi	S				
		/	_			
	CF	S				
	DEFINITION:					
6.	salpingoscop					
•		/				
	CF		-			
_					 	
7.	audiometry					
		/	-			
	CF	S				
	DEFINITION:					

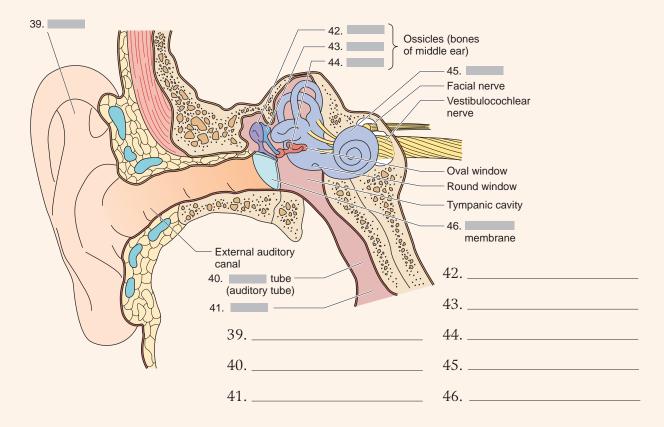
8.	tympanocento		
	CF	S	
9.	otodynia		
	CF	S	
10.	auricle		
	R	S	
11.	myringotomy		
	CF	S	
12.	ceruminosis		
	R	S	
13.	audiology		
	CF	S	
Con	nplete each me	edical term by	writing the missing part:
	_	_	ition of hardening of the bony tissue of the ear
15.	aeropressure	media = i	nflammation of the middle ear caused by changes in atmospheric
16.	lo	ogist = person	who specializes in the study of hearing impairments
17.	t	omy = incision	n into the eardrum for the insertion of tubes
18.	s	cope = instrur	nent used to view the ear canal and tympanum
19.		neuroma = be	enign tumor of the auditory nerve
20.	external audit		oservation of the tympanic membrane as air is released into the
Wri	te the correct	medical term f	or each of the following definitions:
21.			inflammation of the labyrinth
			·
			bleeding from the ear

24	electronic device implanted in the cochlea to provide sound perception
25	hearing impairment of old age
26	ringing in the ear
27	excision of stapes to correct otosclerosis
28	excessive buildup of ear wax
29	earache
30	the study of hearing
31	irrigation of the external ear canal
32	disorder of the inner ear characterized by vertigo, tinnitus, nausea, vomiting, and hearing loss, named after the French physician who first described it

Circle the combining form that corresponds to the meaning given:

33. eardrum	salping/o	ot/o	myring/o
34. hearing	ot/o	audi/o	angi/o
35. wax	cerumin/o	crin/o	scler/o
36. eustachian tube	tympan/o	myring/o	salping/o
37. ear	rhin/o	ot/o	or/o
38. air	acr/o	aur/i	aer/o

Identify the parts of the ear by writing the missing words in the spaces provided:



Circle the correct spelling:

47. aerotitus	aerotitis	airotitis
48. cerumen	ceramen	ceruman
49. myrimogotomy	mirongotomy	myringotomy
50. vertigo	vertago	verttigo
51. antihestamine	antihistamine	antehistamine
52. tinnitis	tinitus	tinnitus
53. stapedectomy	stapesectomy	stapedecktomy
54. defness	deafnass	deafness
55. eustation	eustachian	euhstation



MEDICAL RECORD ANALYSIS

Medical Record 11-1

PROGRESS NOTE

- S: This 21 y.o. white male c/o a clogged ® ear c̄ increasing tinnitus. He has had a slight pharyngitis and nasal congestion x 7 d.
- O: On PE, there was moist infectious debris in the ® ear that was suctioned clear. The ® tympanum was dull and thickened. The ① external ear was clear and the tympanic membrane intact.
- A: OTITIS MEDIA ® ear
- P: (1) Keep ears dry; (2) Rx Pen-VK 250 mg #24 1 p.o. q.i.d. p.c. and h.s.; (3) RTO in 10 d for follow-up (f/u)

QUESTIONS ABOUT MEDICAL RECORD 11-1

- 1. Summarize the subjective information:
 - a. patient complains of clogged and ringing ears, sore throat, and stuffy nose
 - b. patient has a clogged right ear, sore throat, stuffy nose, and dizziness
 - c. patient's right eardrum is thick, dull, and clogged with infectious matter, causing dizziness
 - d. patient complains of a sore throat, stuffy nose, and a clogged right ear that is buzzing
 - e. patient has a sore throat, stuffy nose, and purulent drainage from the right ear
- 2. What was the assessment?
 - a. clogged right ear, sore throat, and stuffy
 - b. inflammation of the right middle ear
 - c. inflammation of the right external ear
 - d. blockage of the eustachian tube
 - e. inflammation of the right eardrum

- 3. When should the patient take the prescribed medication?
 - a. twice in 24 hours
 - b. before meals
 - c. at bedtime
 - d. four times a day
 - e. every 4 hours
- 4. Which is true of the plan?
 - a. patient should return to the office immediately if a fever develops
 - b. patient is given ear drops and advised not to get his ears wet for 10 days
 - c. doctor wants to examine the patient again in 10 days
 - d. patient is given an antibiotic and advised to increase fluid intake
 - e. if not better in 10 days, patient will be referred to an otolaryngologist

Medical Record 11-2 A and B

FOR ADDITIONAL STUDY

Hank Ball, a preschooler, has had recurrent ear infections for one year that his doctor has not been able to treat successfully with antibiotics and other drugs. His preschool teacher also identified nasal speech patterns that his doctor later confirmed were related to Hank's medical problems. After seeing several doctors who recommended surgery, Hank's parents have admitted him to Central Medical Center. Medical Record 11-2A is the history and physical examination before surgery, and Medical Record 11-2B is the subsequent operative report; both were dictated by Dr. Baird, the surgeon.

Read Medical Record 11-2 (pages 554–556) for Hank Ball, then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 11-2

4 D 1 11 12 12 13

Underline each term where it appears in the record, and define each term below.				
	hepatosplenomegaly			
	turbinates			
	extubation			
2. List the patient's three medical problems noted in the "History of Present Illness" in the lest column; write the diagnosis that pertains to each in the right column:				
	Medical Problem Diagnosis			
	a			
	b			
	c			
3. In your own words, explain how Hank's social history is related to his medical history:				
4.	Under the "Review of Systems," were any additional medical symptoms or problems identified? If so, list them below:	nti-		
5.	What does it mean that Hank was afebrile at the time of the examination?			

6.	Carefully read the physical examination. Mark the body areas or systems in which Dr. Baird found any abnormalities:			
	general			
	HEENT			
	chest			
	back			
	rectal/genitalia			
	extremities			
7				
1.	List the surgical procedures identified under "Plan," and briefly describe them in your own words, not using medical terminology:			
	a			
	b			
				
		Ī		
8.	In your own words, not using medical terminology, briefly describe oral intubation:			
		_		
9.	Put the following operative actions in correct order by numbering them from 1 to 11: removal of adenoids			
	incision in the right eardrum			
	PE tube placement in the right tympanum			
	repositioning in Rose position			
	incision in the left eardrum			
	aspiration of the right middle ear extubation			
	removal of wax in the right ear			
	removal of wax in the non-ear			

	adenoids before adenoidectomy:
10.	In your own words, not using medical terminology, briefly describe the condition of Hank's
	intubation
	polyethylene tube placement in the left tympanum
	nasopharyngeal examination

Medical Record 11-2A: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

HISTORY

DATE OF ADMISSION: August 28, 20xx

HISTORY OF PRESENT ILLNESS: The patient is a 4-year-old white male with recurrent ear infections and ear congestion nonresponsive to antibiotic and decongestant therapy over the past 12 months. The patient also has a history of nasal obstruction and nasal speech. The patient is being admitted for myringotomy, polyethylene tubes, and examination of the nasopharynx and adenoidectomy. The patient has also seen other doctors who have recommended surgery, including Dr. Feldman and Dr. Saunders.

PAST MEDICAL HISTORY: Medications: None. Allergies: None. Hospitalizations: None. Surgeries: None. Childhood Diseases: Normal.

FAMILY HISTORY: No cancer or diabetes, although the patient's grandparents have a history of adult-onset diabetes.

SOCIAL HISTORY: Normal development except for speech.

REVIEW OF SYSTEMS: CARDIOVASCULAR: No hypertension and no heart murmurs. PULMONARY: No croup or asthma. GASTROINTESTINAL: No hepatitis. RENAL: Negative. ENDOCRINE: No diabetes. MUSCULOSKELETAL: No joint disease. HEMATOLOGIC: No anemia or bleeding tendencies.

(continued)

RB:nn

D: 8/28/20xx 8/29/20xx

> HISTORY AND PHYSICAL Page 1

PT. NAME: BALL, HANK F.

OP-372201 ID NO: **OPS** ROOM:

ADM. DATE: August 28, 20xx R. BAIRD, M.D. ATT. PHYS:

Medical Record 11-2A: For Additional Study (continued)

CENTRAL MEDICAL CENTER

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PHYSICAL EXAMINATION

GENERAL: The patient is alert and afebrile.

HEENT: TMs are dull and slightly retracted; there is decreased mobility. There is dull light reflex bilaterally. No sinus tenderness on percussion of the maxillary or frontal sinuses; there are swollen turbinates on nasal examination. The oropharynx shows hypertrophic tonsils, and there are hypertrophic adenoids on examination of the nasopharynx.

<u>CHEST:</u> LUNGS: Clear to percussion and auscultation. HEART: Pulse: 88 and regular. There are no murmurs, gallops, or rubs. ABDOMEN: There are no masses or tenderness. No hepatosplenomegaly was noted. There was no costovertebral angle (CVA) tenderness.

BACK: Supple. There are no masses or tenderness. There is mild anterior cervical adenopathy.

RECTAL/GENITALIA: Deferred.

EXTREMITIES: There was no peripheral edema, and there were no ecchymoses.

IMPRESSION: CHRONIC OTITIS MEDIA WITH EFFUSION, NASAL SPEECH, AND NASAL OBSTRUCTION SECONDARY TO ADENOID HYPERTROPHY.

PLAN: The patient is to be admitted as an outpatient for adenoidectomy, myringotomy, and polyethylene (PE) tubes as noted above. The surgery and potential risks and complications have been discussed with the grandfather and mother as well as the possible need for further repeat myringotomy and PE tubes.

R. Baird, M.D.

RB:nn

D: 8/28/20xx T: 8/29/20xx

HISTORY AND PHYSICAL Page 2

PT. NAME:

BALL, HANK F.

ID NO: OP-372201 ROOM NO: OPS

ADM. DATE: August 28, 20xx ATT. PHYS: R. BAIRD, M.D.

Medical Record 11-2B: For Additional Study (continued)

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

OPERATIVE REPORT

DATE OF OPERATION: August 28, 20xx

PREOPERATIVE DIAGNOSIS: Chronic otitis media with effusion bilaterally and nasal obstruction with chronic adenoiditis and adenoid hypertrophy.

POSTOPERATIVE DIAGNOSIS: Chronic otitis media with effusion bilaterally and adenoid hypertrophy and chronic adenoiditis.

OPERATION PERFORMED: Bilateral myringotomy and tubes with adenoidectomy.

SURGEON: R. Baird, M.D.

ANESTHESIOLOGIST: F. Kodama, M.D.

PROCEDURE AND FINDINGS: After general anesthesia induction and oral intubation, the patient's ears were prepped and draped in the usual manner for microscopic myringotomy surgery. A myringotomy in the right ear was carried out following debridement of cerumen. Incision of the circumferential inferior anterior quadrant was carried out. Mucoid material was aspirated from the middle ear. A Shepard polyethylene tube was placed in position without difficulty. Cotton dressing was applied to the ear. The left ear was examined. A similar dull, nonmobile TM was noted. An inferior anterior myringotomy was carried out again, and thick mucoid material was aspirated. A Shepard polyethylene tube was inserted again in the left ear. Cotton dressing was applied to the ear canal. The patient was repositioned in the Rose's position for examination of the nasopharynx which was carried out with a palate retractor, McIvor mouth gag, tongue retractor, and was stabilized with the Mayo stand. The marked adenoid hypertrophy was noted, and the adenoidectomy was carried out with curette technique. The patient tolerated the procedure well, and following extubation, he was sent back to the recovery room in satisfactory postoperative condition.

FINAL DIAGNOSIS: Chronic otitis media with effusion bilaterally, with chronic adenoiditis, adenoid hypertrophy, and nasal obstruction.

RB:as

D: 8/28/20xx T: 8/29/20xx

OPERATIVE REPORT

Page 1

BALL, HANK F. PT. NAME:

OP-372201 ID NO: ROOM NO: OPS

ATT. PHYS: R. BAIRD, M.D.

ANSWERS TO PRACTICE EXERCISES

1. aer/ot/itis

R R S air or gas/ear/ inflammation

2. oto/rrhea

CF

ear/discharge 3. myringo/plasty

CF eardrum/surgical repair or reconstruction

4. acous/tic R S

hearing/pertaining to

- 5. cerumino/lysis CF wax/breaking down or dissolution
- 6. salpingo/scope CF eustachian tube/ instrument for examination
- 7. audio/metry **CF** hearing/process of measuring
- 8. tympano/centesis CF eardrum/puncture for aspiration

- 9. oto/dynia CF S ear/pain
- 10. aur/icle S R ear/small
- 11. myringo/tomy CF eardrum/incision
- 12. cerumin/osis R wax/condition or increase
- 13. audio/logy CF hearing/study of
- 14. otosclerosis
- 15. aerotitis media
- 16. audiologist
- 17. myringotomy
- 18. otoscope
- 19. acoustic neuroma
- 20. pneumatic otoscopy
- 21. labyrinthitis
- 22. vertigo
- 23. otorrhagia
- 24. cochlear implant
- 25. presbycusis
- 26. tinnitus
- 27. stapedectomy
- 28. cerumen impaction
- 29. otalgia

- 30. audiology
- 31. ear lavage
- 32. Ménière disease
- 33. myring/o
- 34. audi/o
- 35. cerumin/o
- 36. salping/o
- 37. ot/o
- 38. aer/o
- 39. auricle
- 40. eustachian
- 41. pharynx
- 42. malleus
- 43. incus
- 44. stapes
- 45. cochlea
- 46. tympanic
- 47. aerotitis
- 48. cerumen
- 49. myringotomy
- 50. vertigo
- 51. antihistamine
- 52. tinnitus
- 53. stapedectomy
- 54. deafness
- 55. eustachian

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 11-1: Progress Note

1. d 2. b 3. d 4. c

Medical Record 11-2 and 11-3: For Additional Study

See CD-ROM for answers.





CHAPTER 1 2

Gastrointestinal System

✓ Chapter 12 Checklist	LOCATION
☐ Read Chapter 12: Gastrointestinal System and complete all programmed review segments.	pages 559-600
 Review the starter set of flash cards and term components related to Chapter 12. 	back of book
☐ Complete the Chapter 12 Practice Exercises and Medical Record Analysis 12-1.	pages 606-614
☐ Complete Medical Record Analysis 12-2 For Additional Study.	pages 615-617
☐ Complete the Chapter 12 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 12 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 12 terms.	CD-ROM

GASTROINTESTINAL SYSTEM OVERVIEW

The gastrointestinal (GI) system has three functions:

- **Digestion**, which is the process of breaking down food by chewing, swallowing, and mixing in digestive juices to convert some of the food into absorbable molecules.
- **Absorption**, which is the passage of digested food molecules through the walls of the intestines and into the bloodstream to be carried to cells of the body.
- **Excretion**, which is the elimination of nonabsorbable nutrients and waste products from the body.



Self-Instruction: Combining Forms

COMBINING FORM	MEANING
abdomin/o, celi/o, lapar/o	abdomen
an/o	anus
appendic/o	appendix
bil/i, chol/e	bile
bucc/o	cheek
cheil/o	lip
col/o, colon/o	colon
cyst/o	bladder or sac
dent/i	teeth
doch/o	duct
duoden/o	duodenum
enter/o	small intestine
esophag/o	esophagus
gastr/o	stomach
gingiv/o	gum
gloss/o, lingu/o	tongue
hepat/o, hepatic/o	liver
herni/o	hernia
ile/o	ileum
inguin/o	groin
jejun/o	jejunum (empty)
lith/o	stone
or/o, stomat/o	mouth
pancreat/o	pancreas
peritone/o	peritoneum
phag/o	eat or swallow
proct/o	anus and rectum
pylor/o	pylorus (gatekeeper)
rect/o	rectum
sial/o	saliva
sigmoid/o	sigmoid colon (resembles)
steat/o	fat
-emesis (suffix)	vomiting



Programmed Review: Combining Forms

ANSWERS	REVIEW
gastr/o enter/o GI	12.1 A gastroenterologist specializes in the gastrointestinal tract. The term is built from the combining forms for stomach and intestine. The combining form meaning stomach is The combining form meaning small intestine is The abbreviation for gastrointestinal is
pertaining to adjective duodenal	12.2 Many combining forms related to the gastrointestinal system are similar to the English words for their meaning. For example, the combining form for duodenum is <i>duoden/o</i> . Recall that the suffix <i>-al</i> , meaning, makes an ending. The adjective form of duodenum is
herni/o hernia	12.3 There are many other combining forms that are also similar to their meaning. The combining form meaning hernia is For example, a herniorrhaphy is the suturing of a repaired
ile/o ileostomy	12.4 The combining form for ileum is For example, the surgical creation of an opening for the ileum is
jejun/o inflammation jejunitis	12.5 The combining form for the jejunum is Recall that the suffix <i>-itis</i> means Inflammation of the jejunum is called
pancreat/o pancreatitis	12.6 The combining form for pancreas is Inflammation of the pancreas is called
an/o anal rectum rectal proct/o anus rectum	12.7 The combining form for anus is The common adjective form is Rect/o, the combining form for, is derived from the Latin word rectus, meaning straight. The rectum is so named for its straight passage from the lower bowel to the anus. The common adjective form is The combining form referring to the anus and rectum is A proctological examination involves the study of the and the
appendic/o appendicitis	12.8 The combining form for appendix is Inflammation of the appendix is called

ANSWERS	REVIEW
peritone/o examination peritoneoscopy	12.9 The combining form for peritoneum is Link this combining form with <i>-scopy,</i> the suffix meaning process of, to build the term describing the endoscopic examination of the peritoneum:
pylor/o adjective pertaining to pyloric	12.10 The combining form for pylorus is Recall that the suffix -ic is an ending that means The adjective form of pylorus is
sigmoid/o sigmoidoscopy	12.11 The combining form for sigmoid colon is The process of examining the sigmoid colon with a sigmoidoscope is called
esophag/o pertaining to adjective esophageal	12.12 The combining form for esophagus is Recall that the suffix <i>-eal</i> , meaning, makes an ending. The adjective form of esophagus is
puncture abdominocentesis celi/o, lapar/o	12.13 In many cases, two or more combining forms have the same meaning. One combining form meaning abdomen is <i>abdomin/o</i> . Recall that the suffix <i>-centesis</i> means a for aspiration. A puncture of the abdomen for aspiration of an abdominal fluid is called Two other combining forms for abdomen are and, as in the terms celiocentesis and laparoscopy.
col/o colon colon/o	12.14 There are two combining forms for colon. An inflammation of the colon is termed colitis, which is made with the combining form The second form is used in the term colonoscopy, which means examination of the That combining form is
bil/i presence stone	12.15 There are two combining forms for bile. The term referring to the production of bile is biligenic, which is made from the combining form The second combining form is used to make the term cholelithiasis. Recall that the suffix <i>-iasis</i> means formation of or of, and the combining form <i>lith/o</i> means Therefore, the term cholelithiasis refers to the

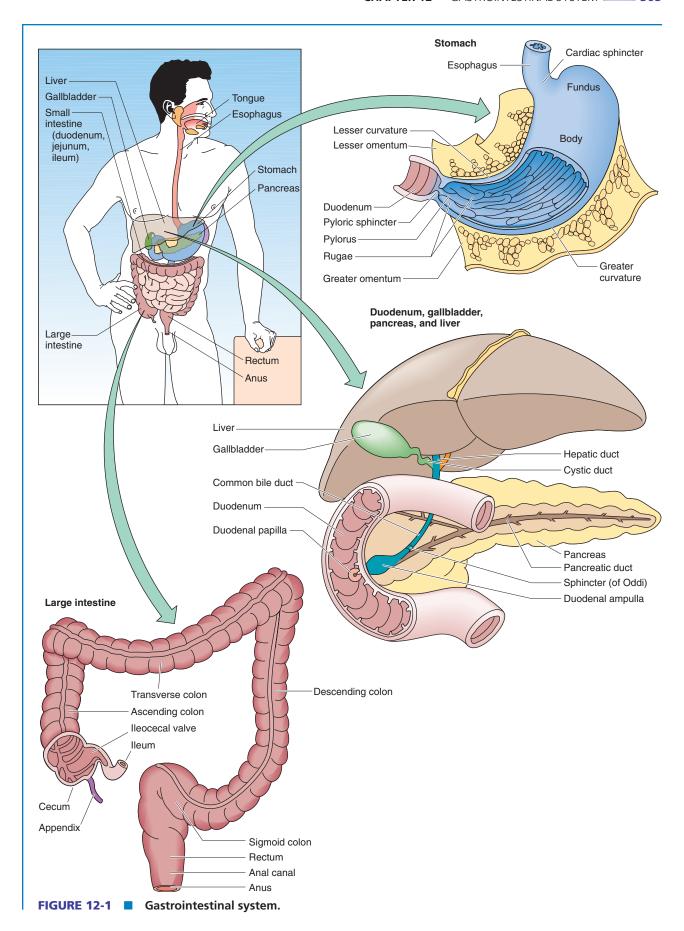
ANSWERS	REVIEW
bile chol/e	presence of a stone in the gallbladder or ducts. The combining form for bile used in this term is
gloss/o under lingu/o	12.16 There are two combining forms for tongue. An inflammation of the tongue is called glossitis. The combining form used to create this term is The other combining form is used in the term sublingual, which means the tongue. This second combining form is
or/o pain, mouth stomat/o	12.17 There are two combining forms for mouth. One is used in the common adjective form oral. That combining form is The other is used, for example, in the term stomalgia, which refers to a condition of in the The combining form meaning mouth in this term is
enlargement hepat/o incision hepatic/o	12.18 There are two similar combining forms meaning liver. The term hepatomegaly, which means an of the liver, is made from the combining form The other is used to make the term hepaticotomy, which refers to an into the liver. That combining form is
bucc/o	12.19 The adjective buccal pertains to the cheek. The combining form for cheek is
repair cheil/o	12.20 Recall that the suffix <i>-plasty</i> refers to surgical or reconstruction. The term cheiloplasty means repair of the lip. The combining form for lip is
chol/e doch/o	12.21 A choledochotomy is an incision into a bile duct. The combining form for bile used here is The combining form meaning duct is
dent/i	12.22 The adjective dental refers to the teeth. The combining form used to make this term is
bile, bladder	12.23 A cholecystectomy is the excision of the gallbladder. Chol/e means, and <i>cyst/o</i> means or sac. Put together, these two combining forms refer to the gallbladder, which holds bile.
gums gingiv/o	12.24 Gingivitis is inflammation of the The combining form meaning gum is

ANSWERS	REVIEW	
sial/o	12.25 A sialolith is a stone of the salivary gland or duct. The combining form for saliva is	
inguin/o	12.26 The adjective inguinal pertains to the groin. The combining form meaning groin is	
condition of without phag/o	12.27 The term aphagia means the condition of being unable to eat. Recall that the suffix <i>-ia</i> means, and the prefix <i>a-</i> means The combining form meaning to eat or to swallow is	
dissolution steat/o	12.28 Recall that the suffix <i>-lysis</i> means breaking down or The term steatolysis refers to the breaking down of fat in digestion. The combining form for fat is	
blood -emesis	12.29 The term hematemesis refers to the vomiting of blood. (<i>Hemat/o</i> is the combining form for) The suffix meaning vomiting is	



Self-Instruction: Anatomic Terms (Fig. 12-1)

TERM	MEANING
oral cavity ōr'ăl kav'i-tē mouth mowth	cavity that receives food for digestion
salivary glands sal'i-vār-ē glanz	three pairs of exocrine glands in the mouth that secrete saliva: the parotid, the submandibular (submaxillary), and the sublingual glands
cheeks chēks	lateral walls of the mouth
lips lipz	fleshy structures surrounding the mouth
palate pal'ăt	structure that forms the roof of the mouth; divided into the hard palate and the soft palate
uvula ū'vyū-lă	small projection hanging from the back middle edge of the soft palate
tongue tŭng	muscular structure of the floor of the mouth covered by mucous membrane and secured by a band-like membrane known as the frenulum



TERM	MEANING
gums gŭmz	tissue covering the processes of the jaws
teeth tēth	hard bony projections in the jaws for masticating (chewing) food
pharynx fă'ringks	throat; passageway for food traveling to the esophagus and for air traveling to the larynx
esophagus ē-sof'ă-gŭs	muscular tube that moves food from the pharynx to the stomach
stomach stŏm'ăk	sac-like organ that chemically mixes and prepares food received from the esophagus
cardiac sphincter kar'dē-ak sfingk'tĕr	opening from the esophagus to the stomach (<i>sphincter</i> = band)
pyloric sphincter pī-lōr'ik sfingk'tĕr	opening from the stomach into the duodenum
small intestine smawl in-tes'tin	smaller tubular structure that digests food received from the stomach
duodenum dū-ō-dē'nйm	first portion of the small intestine
jejunum jĕ-jū'nŭm	second portion of the small intestine
ileum il'ē-йт	third portion of the small intestine
large intestine larj in-tes'tin	larger tubular structure that receives the liquid waste products of digestion, reabsorbs water and minerals, and forms and stores feces for defecation
cecum sē'kŭm	first part of the large intestine
vermiform appendix vĕr'mi-fōrm ă-pen'diks	worm-like projection of lymphatic tissue hanging off the cecum with no digestive function; may help to resist infection (<i>vermi</i> = worm)
colon kō'lon	portions of the large intestine extending from the cecum to the rectum; identified by direction or shape
ascending colon ă-sen'ding kō'lon	portion of the colon that extends upward from the cecum
transverse colon trans-vĕrs' kō'lon	portion of the colon that extends across from the ascending cecum
descending colon dē-send'ing kō'lon	portion of the colon that extends downward from the transverse colon
sigmoid colon sig'moyd kō'lon	portion of the colon (resembling an "S" in shape) that terminates at the rectum
rectum rek'tŭm	distal (end) portion of the large intestine
rectal ampulla rek'tăl am-pul'lă	dilated portion of the rectum just above the anal canal

TERM	MEANING
anus ā'nŭs	opening of the rectum to the outside of the body
feces fē'sēz	waste formed by the absorption of water in the large intestine; usually solid
defecation def-ĕ-kā'shŭn	evacuation of feces from the rectum
peritoneum per'i-tō-nē'ŭm	membrane surrounding the entire abdominal cavity and consisting of the parietal layer (lining the abdominal wall) and the visceral layer (covering each organ in the abdomen)
peritoneal cavity per'i-tō-nē'ăl kav'i-tē	space between the parietal and visceral peritoneum
omentum ō-men'tŭm	an extension of the peritoneum attached to the stomach and connecting it with other abdominal organs
liver liv'ĕr	organ in the upper right quadrant that produces bile, which is secreted into the duodenum during digestion
gallbladder gawl'blad-ĕr	receptacle that stores and concentrates the bile produced in the liver
pancreas pan'krē-as	gland that secretes pancreatic juice into the duodenum, where it mixes with bile to digest food
biliary ducts bil'ē-ār-ē dŭkts	ducts that convey bile; include the hepatic, cystic, and common bile ducts



Programmed Review: Anatomic Terms

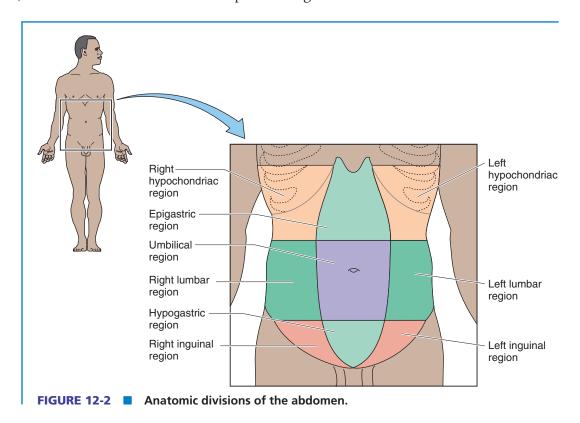
ANSWERS	REVIEW
	12.30 Let's trace the anatomy of the gastrointestinal system from
oral	beginning to end. Food is taken in at the cavity, or
	mouth, where the digestive process begins as food is chewed and
salivary	saliva from the glands is mixed with the food.
	Structures of the mouth include the cheeks, lips, tongue, teeth,
palate	and gums. The roof of the mouth, or the, is
	divided into the hard palate and the soft palate. The small tissue
	projection hanging from the back edge of the soft palate is called
uvula	the
	12.31 Chewed food then passes through the throat to the
	esophagus and then to the stomach. The medical term for the
pharynx	throat is the From the pharynx, the food
esophagus	reaches the, which is a muscular tube
	descending to the stomach. At the bottom of the esophagus is the

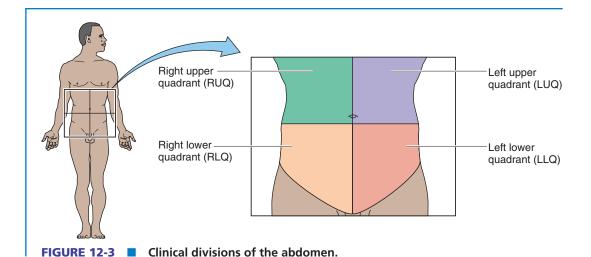
ANSWERS	REVIEW
cardiac stomach	sphincter, the opening from the esophagus to the
stomach pyloric	12.32 The sac-like organ that mixes and prepares food received from the esophagus is called the From the stomach, food moves next to the small intestine through the sphincter.
sphincter, duodenum jejunum ileum	12.33 The small intestine does most of the digestive work and has three segments. The first, connected to the stomach at the pyloric, is called the After the duodenum comes the second portion, the After the jejunum comes the third portion, the From the ileum, the food passes into the large intestine.
liver biliary gallbladder duodenum	12.34 Other organs produce substances to help the small intestine digest food. Bile is produced in the and is conveyed through the ducts to the gallbladder. The stores and concentrates the bile that is produced in the liver, which is then conveyed to the first portion of the small intestine, the
pancreas	12.35 Pancreatic juice, which is produced in the, is also secreted into the duodenum. This assists in digestion as well.
large cecum appendix	12.36 After leaving the small intestine, the digested food enters the intestine, where water and minerals are reabsorbed and wastes are formed into feces for defecation. The first part of the large intestine is called the Hanging from the cecum is a projection of tissue with no known digestive function, which is called the vermiform
colon ascending transverse	12.37 The next part of the large intestine, the, is identified in four sections that are named for their direction or shape. The portion of the colon extending upward from the cecum is called the colon. The portion that extends from the ascending portion across the body is the
descending sigmoid	colon. The portion extending downward from the transverse colon is the colon. The S-shaped portion at the end of the descending colon is the colon.

ANSWERS	REVIEW
rectum	The sigmoid colon terminates at the, which is the end of the large intestine.
ampulla anus feces defecation	12.38 The dilated portion of the rectum just above the anal canal is called the rectal Waste leaves the body through the opening of the rectum, called the The waste formed in the large intestine is called The evacuation of feces from the rectum is called
peritoneum abdominal peritoneal peritoneum	12.39 Surrounding the entire abdominal cavity is a membrane called the The peritoneum lines not only the cavity (the parietal layer) but also each organ in the abdomen (the visceral layer). The space between the parietal and visceral peritoneum is called the cavity. The omentum is an extension of the that is
	attached to the stomach, connecting it with other abdominal organs.

ANATOMIC AND CLINICAL DIVISIONS OF THE ABDOMEN

Anatomic and clinical divisions of the abdomen provide reference points to describe abdominal locations. There are nine specific anatomic divisions and four general clinical divisions (Figs. 12-2 to 12-4). All references are based on the patient's right or left.





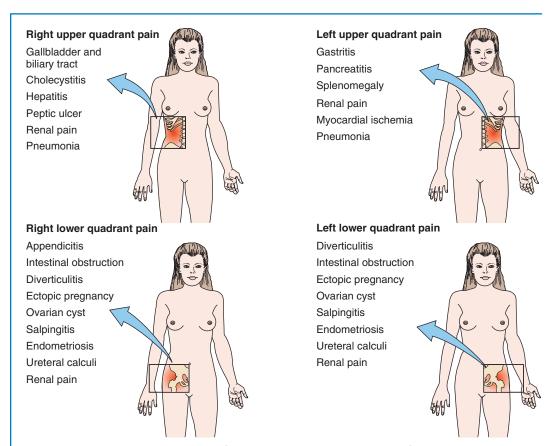


FIGURE 12-4 Common sites of abdominal pain characteristic of various conditions.

Self-Instruction: Anatomic Divisions (see Fig. 12-2)

REGION	LOCATION
hypochondriac regions hī-pō-kon'drē-ak rē'jŭnz	upper lateral regions beneath the ribs

REGION	LOCATION
epigastric region ep-i-gas'trik rē'jйn	upper middle region below the sternum
lumbar regions lŭm'bar rē'jŭnz	middle lateral regions
umbilical region йт-bil'i-kăl rē'jйn	region of the navel
inguinal regions ing'gwi-năl rē'jŭnz	lower lateral groin regions
hypogastric region hī-pō-gas'trik rē'jŭn	region below the navel

Programmed Review: Anatomic Divisions

ANSWERS	REVIEW
below hypochondriac	12.40 The abdomen is divided into several anatomic regions for reference purposes. Recall that the prefix <i>hypo-</i> means or deficient. The upper lateral regions beneath the ribs (<i>chondro</i> = cartilaginous) are called the regions.
upon gastr/o epigastric	12.41 The prefix <i>epi-</i> means The combining form meaning stomach is Thus, the name for the upper middle region below the sternum and lying approximately upon the stomach is the region.
lumbar	12.42 The middle lateral areas of the abdomen, to each side of the lumbar spine, are the regions.
umbilical	12.43 The medical term for the navel is the umbilicus. The anatomic area in the region of the navel is called the region.
inguin/o inguinal	12.44 The combining form for groin is The lower lateral groin regions are the regions.
hypo- gastr/o hypogastric	12.45 The prefix for below is, and the combining form for stomach is Thus, the area below the navel, approximately below the stomach, is called the region.



Self-Instruction: Symptomatic Terms

TERM	MEANING
anorexia an-ō-rek'sē-ă	loss of appetite (<i>orexia</i> = appetite)
aphagia ă-fā'jē-ă	inability to swallow
ascites (Fig. 12-5) ă-sī'tēz	accumulation of fluid in the peritoneal cavity (ascos = bag)
buccal bŭk'ăl	in the cheek
diarrhea dī-ă-rē'ă	frequent loose or liquid stools
constipation kon-sti-pā'shŭn	infrequent or incomplete bowel movements characterized by hardened, dry stool that is difficult to pass (<i>constipo</i> = to press together)

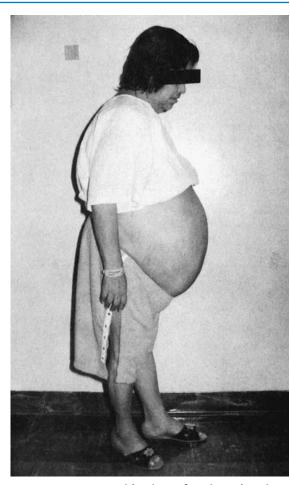


FIGURE 12-5 Side view of patient showing massive ascites and distention of abdomen.

TERM	MEANING
TERM	MEANING
dyspepsia dis-pep'sē-ă	indigestion (pepsis = digestion)
dysphagia dis-fā'jē-ă	difficulty in swallowing
eructation ē-rŭk-tā'shŭn	belch
flatulence flat'yū-lents	gas in the stomach or intestines (<i>flatus</i> = a blowing)
halitosis hal-i-tō'sis	bad breath (<i>halitus</i> = breath)
hematemesis hē-mă-tem'ĕ-sis	vomiting blood
hematochezia hē'mă-tō-kē'zē-ă	red blood in stool (<i>chezo</i> = defecate)
hep'ă-tō-meg'ă-lē	enlargement of the liver
hyperbilirubinemia hī'pĕr-bil'i-rū-bi-nē'mē-ă	excessive level of bilirubin (bile pigment) in the blood
icterus ik'tĕr-ŭs jaundice (Fig. 12-6) jawn'dis	yellow discoloration of the skin, sclera (white of the eye), and other tissues caused by excessive bilirubin in the blood (<i>jaundice</i> = yellow)
melena me-lē'nă	dark-colored, tarry stool caused by old blood
nausea naw'zē-ă	feeling sick in the stomach
steatorrhea ste'ă-tō-rē'ă	feces containing fat
sublingual sŭb-ling'gwăl hypoglossal hī-pō-glos'ăl	under the tongue



FIGURE 12-6 ■ The yellow color of jaundice (icterus) is easily seen in the sclera of this patient and in the patient's skin as contrasted with the examiner's hand.



Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
condition of without phag/o	12.46 Recall that the suffix -ia means The prefix a- means Again, the combining form meaning to eat or swallow is Therefore, the term for the condition of being unable to swallow (without gwallowing) is
aphagia faulty dysphagia	swallowing) is 12.47 The prefix <i>dys-</i> means painful, difficult, or The term for the condition of having difficulty swallowing, then, is
anorexia	12.48 The condition of loss of (or without) appetite (<i>orexia</i> = appetite) is called12.49 The condition of indigestion, or of painful digestion
dyspepsia	(pepsis = digestion), is called
adjective pertaining to bucc/o buccal	12.50 The suffix -al is an ending meaning The combining form meaning cheek is The adjective form meaning pertaining to the cheek is
ascites	12.51 Formed from the root <i>ascos</i> (meaning bag), the term for an accumulation of fluid in the peritoneal cavity is
eructation	12.52 From the Latin word eructo comes the term for belch:
flatulence	12.53 From the Latin word flatus (meaning a blowing) comes the term for gas in the stomach or intestines:
condition halitosis	12.54 The suffix <i>-osis</i> means increase or The condition of having bad breath is called
-emesis hematemesis	12.55 A combining form for blood is <i>hemat/o</i> . Again, the suffix meaning vomiting is The term for vomiting blood is
hematochezia	12.56 Formed from the root word <i>chezo</i> (meaning defecate) comes this term for the condition of having red blood in the stool:
hepat/o	12.57 The two combining forms for liver are <i>hepatic/o</i> and Recall that the suffix for enlargement is

ANSWERS	REVIEW
-megaly hepatomegaly	Using the latter combining form for liver, the term for enlargement of the liver is
-emia, excessive	12.58 Recall that the suffix meaning blood condition is The prefix <i>hyper-</i> means above or The condition of having excessive bilirubin in the blood is
icterus	12.59 When there is excessive bilirubin in the blood, the skin is discolored yellow. This is called jaundice, or
melena	12.60 From the Greek word melaina (meaning black) comes this term for dark-colored, tarry stool caused by old blood:
nausea	12.61 From a Greek word originally referring to seasickness comes the term for feeling sick in the stomach:
steat/o discharge steatorrhea	12.62 Again, the combining form for fat is Recall that the suffix <i>-rrhea</i> means The term for fat in the feces (a discharge of fat) is
lingu/o, below or under	12.63 The two combining forms for tongue are <i>gloss/o</i> and The prefix <i>sub-</i> means Made with the latter combining form, the term for under the tongue is
through, discharge	12.64 Formed from the prefix <i>dia-</i> , meaning across or, and the suffix <i>rrhea-</i> , meaning, the term describing frequent loose or liquid stool is
diarrhea constipation	In contrast, the term describing hardened, dry stool that is difficult to pass is

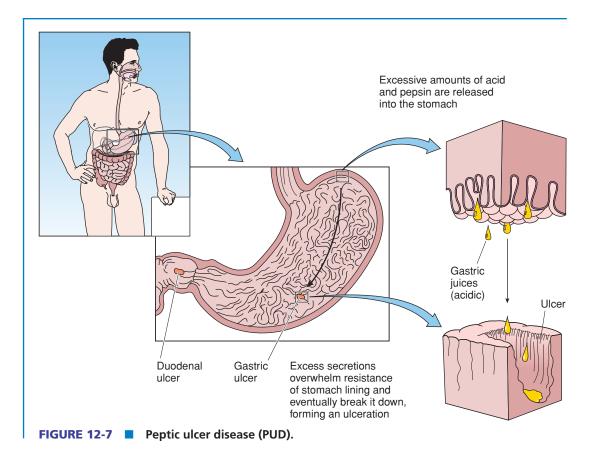


Self-Instruction: Diagnostic Terms

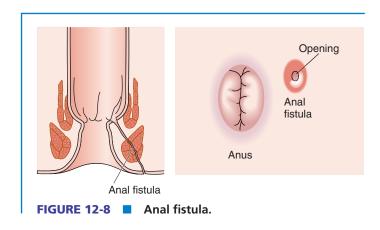
TERM	MEANING	
RELATED TO THE UPPER GASTROINTESTINAL TRACT		
ankyloglossia ang'ki-lō-glos'ē-ă	tongue-tie; a defect of the tongue characterized by a short, thick frenulum (<i>ankyl/o</i> = crooked or stiff)	

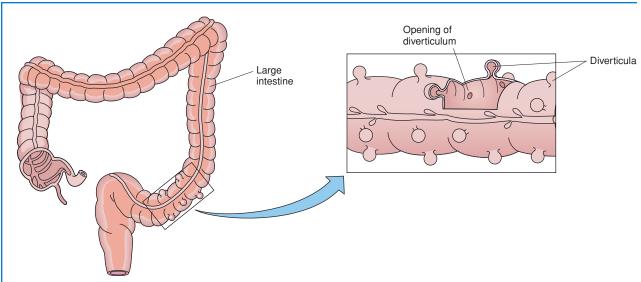
TERM	MEANING
cheilitis kī-lī'tis	inflammation of the lip
esophageal varices (see Fig. 12-15) ē-sof'ă-jē'ăl var'i-sēz	swollen, twisted veins in the esophagus that are especially susceptible to ulceration and hemorrhage
esophagitis ē-sof-ă-jī'tis	inflammation of the esophagus
gastritis (see Fig. 12-15) gas-trī'tis	inflammation of the stomach
gastroesophageal reflux disease (GERD) gas'trō-ē-sof-ă-jē'ăl rē'flŭks di-zēz'	backflow of contents of the stomach into the esophagus, often resulting from abnormal function of the lower esophageal sphincter, causing burning pain in the esophagus
gingivitis jin-ji-vī'tis	inflammation of the gums
glossitis glo-sī'tis	inflammation of the tongue
parotiditis pă-rot-i-dī'tis parotitis par-ō-tī'tis	inflammation of the parotid gland; also called mumps
peptic ulcer disease (PUD) (Fig. 12-7) pep'tik ŭl'sĕr di-zēz'	sore on the mucous membrane of the stomach, duodenum, or any other part of the gastrointestinal system exposed to gastric juices; commonly caused by infection with <i>Helicobacter pylori</i> bacteria (<i>pept/o</i> = to digest)
gastric ulcer gas'trik ŭl'sĕr	ulcer located in the stomach
duodenal ulcer dū'ō-dē'năl ŭl'sĕr	ulcer located in the duodenum
pyloric stenosis pī-lōr'ik ste-nō'sis	narrowed condition of the pylorus
sialoadenitis sī'ă-lō-ad-ĕ-nī'tis	inflammation of a salivary gland
stomatitis stō-mă-tī'tis	inflammation of the mouth
RELATED TO THE LOWER GASTROINTESTINAL TRACT	
anal fistula (Fig. 12-8)	an abnormal, tube-like passageway from the anus that may

anal fistula (Fig. 12-8) ā'năl fis'tyū-lă	an abnormal, tube-like passageway from the anus that may connect with the rectum (<i>fistula</i> = pipe)
appendicitis ă-pen-di-sī'tis	inflammation of the appendix
colitis kō-lī'tis	inflammation of the colon (large intestine)



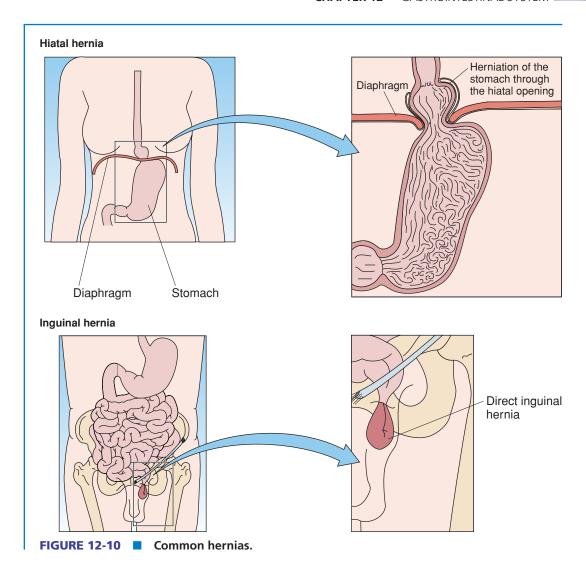
TERM	MEANING
ulcerative colitis ŭl'sĕr-ă-tiv kō-lī'tis	chronic inflammation of the colon with ulcerations
colorectal polyps (see Fig. 12-15) kol'ō-rek'tăl pol'ips	benign tissue growths on the mucous membrane lining the large intestine and rectum; adenomatous types are precancerous and likely to develop into malignancy
pediculated polyp pĕ-dik'yū-lā'tĕd pol'ip	projected on a stalk (ped/o = foot)
sessile polyp ses'il pol'ip	lying flat on the surface (sessilis = low growing)





		_	
FIGURE	12-9	Dive	rticulosis.

TERM	MEANING
diverticulum dī-vĕr-tik'yū-lŭm	an abnormal side pocket in the gastrointestinal tract; usually related to a lack of dietary fiber
diverticulosis (Fig. 12-9; see Fig. 12-15) dī'vĕr-tik-ū-lō'sis	presence of diverticula in the gastrointestinal tract, especially the colon
diverticulitis dī'vĕr-tik-yū-lī'tis	inflammation of diverticula
dysentery dis'en-ter-ē	inflammation of the intestine characterized by frequent, bloody stools; most often caused by bacteria or protozoa (e.g., amebic dysentery)
enteritis en-tĕr-ī'tis	inflammation of the small intestine
hemorrhoid hem'ŏ-royd	swollen, twisted vein (varicosity) in the anal region (haimorrhois = a vein likely to bleed)
hernia hĕr'nē-ă	protrusion of a part from its normal location
hiatal hernia (Fig. 12-10; see Fig. 12-18) hī-ā'tăl hĕr'nē-ă	protrusion of a part of the stomach upward through the opening in the diaphragm
inguinal hernia (Fig. 12-10) ing'gwi-năl hĕr'nē-ă	protrusion of a loop of the intestine through layers of the abdominal wall in the inguinal region
incarcerated hernia in-kar'sĕr-ā-tĕd hĕr'nē-ă	hernia that is swollen and fixed within a sac, causing an obstruction
strangulated hernia strang'gyū-lā-tĕd hĕr'nē-ă	hernia that is constricted, cut off from circulation, and likely to become gangrenous
umbilical hernia йт-bil'i-kăl hĕr'nē-ă	protrusion of the intestine through a weakness in the abdominal wall around the umbilicus (navel)

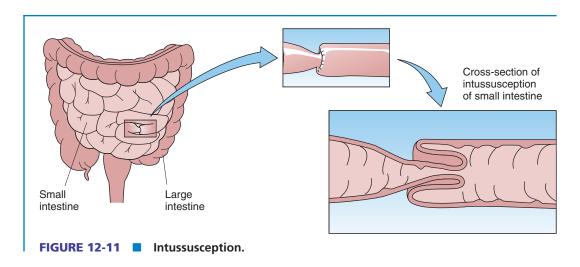


TERM	MEANING
ileitis il-ē-ī'tis	inflammation of the lower portion of the small intestine
intussusception (Fig. 12-11) in'tŭs-sŭs-sep'shŭn	prolapse of one part of the intestine into the lumen of the adjoining part (<i>intus</i> = within; <i>suscipiens</i> = to take up)
peritonitis per'i-tō-nī'tis	inflammation of the peritoneum
proctitis prok-tī'tis	inflammation of the rectum and the anus
volvulus (Fig. 12-12) vol'vyū-lŭs	twisting of the bowel on itself, causing obstruction (volvo = to roll)

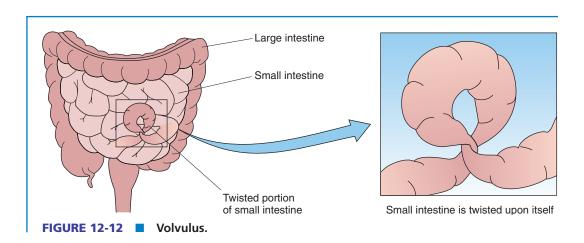
RELATED TO THE ACCESSORY ORGANS OF THE GASTROINTESTINAL SYSTEM

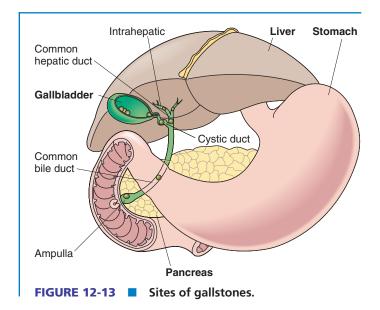
cholangitis	S
kō-lan-jī'tis	

inflammation of the bile ducts



TERM	MEANING
cholecystitis kō'lē-sis-tī'tis	inflammation of the gallbladder
choledocholithiasis (Fig. 12-13; see Fig. 12-15) kō-led'ō-kō-lith-ī'ă-sis	presence of stones in the common bile duct
cholelithiasis (see Fig. 12-13) kō'lē-li-thī'ă-sis	presence of stones in the gallbladder or bile ducts
cirrhosis sir-rō'sis	chronic disease characterized by degeneration of liver tissue; most often caused by alcoholism or a nutritional deficiency (<i>cirrho</i> = yellow)
hepatitis hep-ă-tī'tis	inflammation of the liver
hepatitis A hep-ă-tī'tis A	inflammation of the liver caused by the hepatitis A virus (HAV), usually transmitted orally through fecal contamination of food or water





TERM	MEANING
hepatitis B hep-ă-tī'tis B	inflammation of the liver caused by the hepatitis B virus (HBV), which is transmitted sexually or by exposure to contaminated blood or body fluids
hepatitis C hep-ă-tī'tis C	inflammation of the liver caused by the hepatitis C virus (HCV), which is transmitted by exposure to infected blood; this strain is rarely contracted sexually
pancreatitis pan'krē-ă-tī'tis	inflammation of the pancreas

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
-itis	12.65 The suffix for inflammation is Many parts of
	the gastrointestinal system can become inflamed; thus, there are
	many diagnostic terms for inflammation of different organs. The
stomat/o	two combining forms for mouth are <i>or/o</i> and
	Made with the latter, the term for inflammation of the mouth is
stomatitis	·
sial/o	12.66 The combining form for saliva is Using
	that combining form along with aden/o, meaning gland, the term
sialoadenitis	for inflammation of a salivary gland is
parotiditis or parotitis	Inflammation of the parotid gland is called
	(also known as mumps).

ANSWERS	REVIEW
cheil/o cheilitis	12.67 The combining form meaning lip is Inflammation of the lip is called
gloss/o glossitis gingiv/o gingivitis	12.68 The two combining forms for tongue are <i>lingulo</i> and Using the latter, the term for inflammation of the tongue is The combining form for gums is, and the term for inflammation of the gums is
esophag/o	12.69 The combining form for esophagus is,
esophagitis gastr/o gastritis	and the term for inflammation of the esophagus is The combining form for stomach is, and the term for inflammation of the stomach is
enter/o	12.70 The combining form for small intestine is,
enteritis	and the term for inflammation of the small intestine is
ile/o ileitis col/o colitis ulcerative colitis	12.71 The combining form for the ileum is, and inflammation of the ileum (the lower portion of the small intestine) is called The two combining forms for the colon are <i>colon/o</i> and Made from the latter form, the term for inflammation of the colon is When this occurs chronically along with ulcerations, it is called
ulcerative contis	
condition of diverticulosis	12.72 Recall that the suffix <i>-osis</i> means increase or The condition of having diverticula (abnormal little pockets in the gastrointestinal tract) is called If the diverticula are inflamed, this is
diverticulitis	called
appendic/o appendicitis peritone/o, inflammation	12.73 The combining form for the appendix is, and inflammation of the appendix is called The combining form for the peritoneum is Peritonitis describes
peritoneum	of the

ANSWERS	REVIEW
proct/o proctitis	12.74 The combining form referring to the anus and rectum is It is used in the term for inflammation of the rectum and the anus:
gallbladder cholecystitis cholangitis	12.75 <i>Cholecyst/o</i> refers to the Inflammation of the gallbladder is termed Formed from <i>chol/e</i> (bile) and <i>angi/o</i> (vessels), which, when combined, refer to the bile ducts, the term for inflammation of the bile ducts is
pancreat/o pancreatitis	12.76 The combining form for pancreas is Inflammation of the pancreas is
hepat/o hepatitis A fecal B sexually blood, C	12.77 The two combining forms for liver are hepatic/o and Made from the latter, the term for inflammation of the liver is The different types of hepatitis are named after the viruses that cause them. The hepatitis virus (HAV) is transmitted orally through contamination of food or water. Hepatitis virus (HBV) is transmitted or by exposure to contaminated or body fluids. Hepatitis virus (HCV) is transmitted primarily through exposure to infected
condition of cirrhosis	12.78 Again, the suffix <i>-osis</i> refers to an increase or The chronic liver condition that causes yellowing (<i>cirrho</i> = yellow) of tissues is called It is usually caused by alcoholism or a nutritional deficiency.
colon rectum pertaining to colorectal polyps pediculated	12.79 <i>Col/o</i> is a combining form referring to the Combined with <i>rect/o</i> , meaning, and the suffix <i>-al</i> , meaning, the adjective referring to the colon and the rectum is The mucous membranes lining the colon and the rectum are common sites for the development of benign tissue growths called Those that project from a stalk are called polyps, and those that lie flat on the surface are called
sessile malignancy or cancer	polyps. Adenomatous types are likely to develop into a

inguinal

umbilical

__ hernia. Protrusion of the intestine through a

weakness in the abdominal wall around the umbilicus is called

hernia.

ANSWERS	REVIEW
incarcerated strangulated	12.87 A hernia that is swollen and becomes fixed within a sac is called an hernia. A hernia that becomes constricted and cut off from circulation is called a hernia.
intussusception volvulus	12.88 A section of intestine may prolapse into the lumen of an adjoining section, causing an If a section of intestine twists upon itself, an obstruction may result; this condition is called (volvo = to roll).
anal fistula	12.89 A fistula (<i>fistula</i> = pipe) is an abnormal connection. A fistula from the anus to the rectum is called an
hemorrhoid	12.90 <i>Hem/o</i> is a combining form referring to blood. A swollen, twisted vein in the anal region that is liable to bleed is called a
bile lith/o -iasis cholelithiasis	12.91 The combining form <i>chol/e</i> means The combining form for stone is The suffix meaning formation of or presence of is Therefore, the term for the presence of stones in the gallbladder or bile ducts is
choledocholithiasis	12.92 The combining forms <i>chol/e</i> and <i>doch/o</i> together refer to the common bile duct. The term for the presence of stones in the common bile duct is



Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
BIOPSY	
biopsy (Bx) bī'op-sē incisional biopsy in-sizh'ŭn-ăl bī'op-sē	removal and microscopic study of tissue for pathological examination removal of a portion of a lesion
excisional biopsy ek-sizh'ŭn-ăl bī'op-sē	removal of an entire lesion

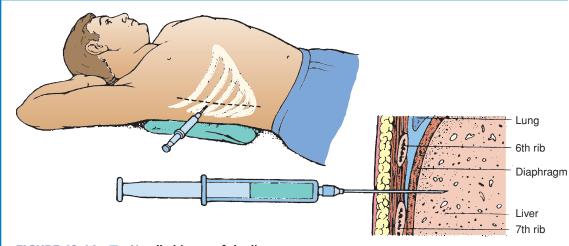


FIGURE 12-14 Needle biopsy of the liver.

TEST OR PROCEDURE	EXPLANATION
needle biopsy (Fig. 12-14) nē'dĕl bī' op-sē	percutaneous removal of tissue or fluid using a special, hollow needle (e.g., for liver biopsy)
ENDOSCOPY	
endoscopy (Fig. 12-15) en-dos'kŏ-pē	examination within a body cavity with a flexible endoscope for diagnosis or treatment; used in the gastrointestinal tract to detect abnormalities and to perform procedures such as biopsy, excision of lesions, and therapeutic interventions
Lower Gastrointestinal Endoscopy	
colonoscopy kō-lon-os'kŏ-pē	examination of the colon using a flexible colonoscope
proctoscopy	examination of the rectum and anus with a proctoscope

Upper Gastrointestinal Endoscopy

prok-tos'kŏ-pē

sigmoidoscopy

sig-moy-dos'kŏ-pē

esophagogastroduodenoscopy examination of the lining of the esophagus, stomach, and duodenum with a flexible endoscope for diagnostic and/or (EGD) ē-sof'ă-gō-gas'trō-dū'ō-den-os-kŏ-pē therapeutic purposes, such as biopsy, excision of lesions, removal of swallowed objects, dilation of obstructions, stent placement, measures to control hemorrhage, etc. examination of the small intestine made by a tiny video capsule endoscopy kap'sūl en-dos'kŏ-pē camera placed in a capsule and then swallowed; images are transmitted to a waist-belt recorder and then downloaded onto a computer for assessment of possible abnormalities; traditional endoscopy cannot completely access the small intestine because of its length and complexity

sigmoidoscope

examination of the sigmoid colon with a rigid or flexible

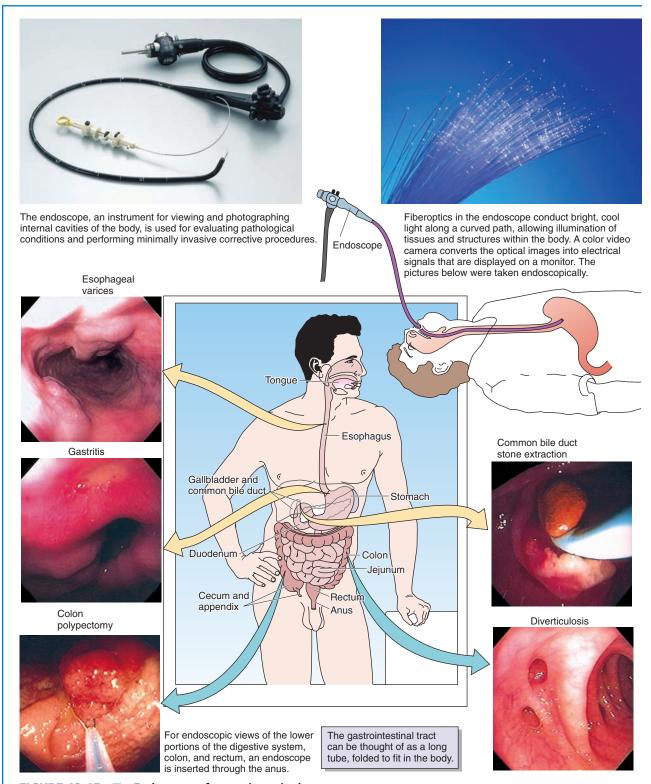
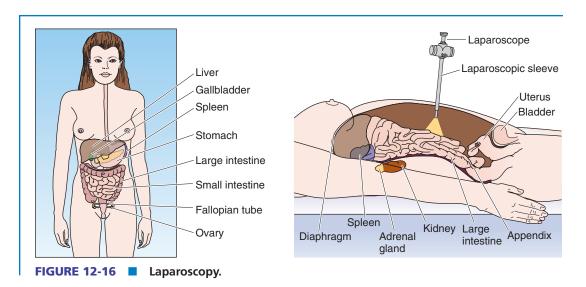


FIGURE 12-15 Endoscopy of gastrointestinal system.



TEST OR PROCEDURE

EXPLANATION

Endoscopy of the Accessory Organs and Abdomen

endoscopic retrograde cholangiopancreatography (ERCP)

en-dō-skop'ik ret'rō-grād kō-lan'jē-ō-pan-krē-ă-tog'ră-fē

laparoscopy (Fig. 12-16) lap-ă-ros'kŏ-pē

endoscopic procedure including x-ray fluoroscopy to examine the ducts of the liver, gallbladder, biliary ducts, and pancreas; includes use of instruments to obtain tissue samples, extract biliary stones, relieve obstructions, etc.

examination of the abdominal cavity with a laparoscope for diagnostic purposes and/or to perform surgery

IMAGING STUDIES

magnetic resonance imaging (MRI)

mag-net'ik rez'ō-nănts im'ă-jing

radiography

(Figs. 12-17 to 12-19) rā'dē-og'ră-fē

upper gastrointestinal

(GI) series (see Fig. 12-18) йр'ĕr gas'trō-in-tes'ti-năl sēr'ēz

barium swallow

(see Fig. 12-19) ba'rē-ŭm swahl'ō

fluoroscopy

flōr-os'kŏ-pe

small bowel series

smawl bow'el sēr'ēz

nonionizing imaging technique for visualizing the abdominal cavity to identify disease or deformity in the gastrointestinal tract

x-ray imaging used to detect a condition or anomaly within the gastrointestinal tract

x-ray of the esophagus, stomach, and duodenum after the patient has swallowed a contrast medium; barium is the most commonly used medium

x-ray of the esophagus only; often used to locate swallowed objects

x-ray imaging with a fluorescent screen to visualize structures in motion (e.g., during a barium swallow)

x-ray examination of the small intestine; generally done in conjunction with an upper GI series

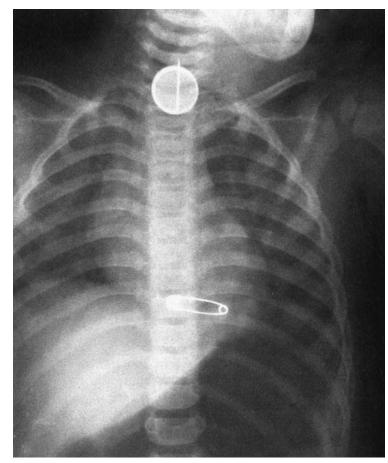


FIGURE 12-17 ■ Plain radiograph (without contrast) showing two impacted foreign bodies in a child 2½ years of age. The child ingested a safety pin and an ornamental pin. Endoscopic removal was required.

TEST OR PROCEDURE	EXPLANATION
lower gastrointestinal (GI) series lō'ĕr gas'trō-in-tes'ti-năl sēr'ēz barium enema ba'rē-yŭm en'ĕ-mă	x-ray imaging of the colon after administration of an enema containing a contrast medium
cholangiogram kō-lan'jē-ō-gram	x-ray image of the bile ducts; often performed during surgery
cholecystogram kō-lē-sis'tō-gram	x-ray image of the gallbladder obtained after oral ingestion of iodine
computed tomography (CT) of the abdomen kom-pyū'tĕd tō-mog'ră-fē of the ab'dō-men	cross-sectional x-ray imaging of the abdomen used to identify a condition or anomaly within the gastrointestinal tract
sonography sŏ-nog'ră-fē	ultrasound imaging
abdominal sonogram (Fig. 12-20, B) ab-dom'i-năl son'ō-gram	ultrasound image of the abdomen to detect disease or deformity in organs and vascular structures (e.g., liver, pancreas, gallbladder, spleen, and aorta)

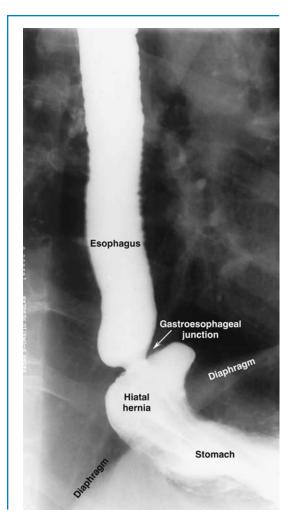


FIGURE 12-18 Upper gastrointestinal (GI) radiograph showing hiatal hernia.

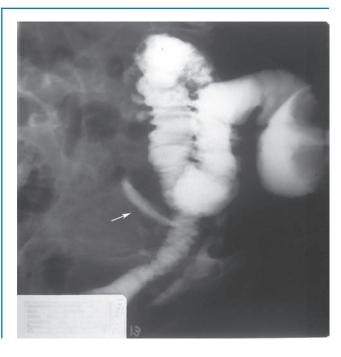


FIGURE 12-19 Barium enema radiograph of colon showing ruptured diverticulum. The elongated appearance is similar to that of a deflated balloon.



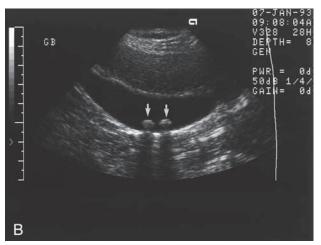


FIGURE 12-20 A. Abdominal sonography procedure. B. Abdominal sonogram of two stones present in the gallbladder (arrows).

TEST OR PROCEDURE	EXPLANATION
endoscopic ultrasonography (EUS) en-dō-skop'ik ŭl'tră-sŏ-nog'ră-fē	images produced using a sonographic transducer within an endoscope to evaluate abnormalities of the upper and lower gastrointestinal tracts and adjacent structures (e.g., biliary ducts, gallbladder, and pancreas); also used to guide needle biopsy of tissue and in determining the stage of a malignancy
STOOL STUDIES	
stool culture and sensitivity (C&S) stūl kŭl'chŭr and sen-si-tiv'i-tē	isolation of a stool specimen in a culture medium to identify disease-causing organisms; if organisms are present, the drugs to which they are sensitive are listed
stool occult blood study stūl ŏ-kŭlt' blŭd stŭd'ē	chemical test of a stool specimen to detect the presence of blood; positive findings indicate bleeding in the gastrointestinal tract



Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
	12.93 Recall that the suffix for the process of examination
-scopy, within	is The prefix <i>endo-</i> means
	The general term for a scope used for conducting an

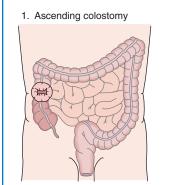
ANSWERS	REVIEW
capsule endoscopy	be swallowed and used for examination. This procedure is called
biopsy excisional portion skin needle	12.101 The removal and microscopic study of suspicious lesions or tissues is called a Specimens for biopsy are collected in various ways. When a lesion is removed entirely, the procedure is called an of a lesion for examination. Recall that the term cutaneous pertains to the Another type of biopsy that uses a hollow needle inserted percutaneously (through the skin) to remove tissue for analysis is simply called a biopsy.
magnetic resonance imaging	12.102 The nonionizing imaging technique used in many body systems is also used in the gastrointestinal system to visualize the abdominal cavity. Abbreviated MRI, this procedure is called
-graphy radiography	12.103 Recall that the suffix meaning process of recording is The general term for recording an x-ray image is
gastrointestinal swallow upper gastrointestinal series	12.104 Several specialized radiographic procedures are performed to depict the
small bowel series	12.105 Bowel is another term for intestine. Using the term bowel, the x-ray examination of the small intestine is called a
	12.106 Barium contrast can also be introduced into the lower gastrointestinal tract through an enema. An x-ray

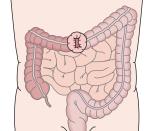


Self-Instruction: Operative Terms

Study the following:

TERM	MEANING
abdominocentesis ab-dom'i-nō-sen-tē'sis	puncture of the abdomen for aspiration of fluid
abdominal paracentesis ab-dom'i-năl par'ă-sen-tē'sis	puncture of the abdomen for aspiration of fluid in the peritoneal cavity (e.g., fluid accumulated in ascites)
anal fistulectomy ā'năl fis-tyū-lek'tŏ-mē	excision of an anal fistula
anastomosis ă-nas'tō-mō'sis	union of two hollow vessels; a technique used in bowel surgery
appendectomy ap-pen-dek'tō-mē	excision of a diseased appendix
bariatric surgery bar-ē-at'rik sūr'jĕr-ē	treatment of morbid obesity by surgery to the stomach and/or intestines; procedures include restrictive techniques that limit the size of the stomach and malabsorptive techniques that limit the absorption of food (<i>baros</i> = weight; <i>iatric</i> = pertains to treatment)
cheiloplasty kī'lō-plas-tē	repair of the lip
cholecystectomy kō'lē-sis-tek'tō-mē	excision of the gallbladder; common treatment for symptomatic gallbladder disease (e.g., cholelithiasis, cholecystitis, and cholangitis)
laparoscopic cholecystectomy lap'ă-rō-skop'ik kō'lē-sis- tek'tō-mē	excision of the gallbladder through a laparoscope
colostomy (Fig. 12-21) kō-los'tō-mē	creation of an opening in the colon through the abdominal wall to create an abdominal anus, allowing stool to bypass a diseased portion of the colon; performed to treat ulcerative colitis, cancer, or obstructions
esophagoplasty ē-sof'ă-gō-plas-tē	repair of the esophagus





2. Transverse colostomy



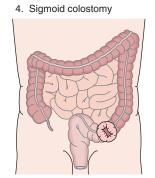


FIGURE 12-21 Common colostomy sites.

TERM	MEANING
gastrectomy gas-trek'tŏ-mē	partial or complete removal of the stomach
gastric resection gas'trik rē-sek'shŭn	partial removal and repair of the stomach
gas'trō-en-tĕr-os'tŏ-mē	formation of an artificial opening between the stomach and small intestine; often performed at the time of gastrectomy to route food from the remainder of the stomach to the intestine; also performed to repair a perforated duodenal ulcer
glo-sek'tŏ-mē	excision of all or part of the tongue
glo-sōr'ă-fē	suture of the tongue
hemorrhoidectomy hem'ō-roy-dek'tŏ-mē	excision of hemorrhoids
hepatic lobectomy he-pat'ik lō-bek'tŏ-mē	excision of a lobe of the liver
herniorrhaphy hĕr'nē-ōr'ă-fē hernioplasty hĕr'nē-ō-plas-tē	repair of a hernia
ileostomy il-ē-os'tŏ-mē	surgical creation of an opening on the abdomen to which the end of the ileum is attached, providing a passageway for ileal discharges; performed after removal of the colon, such as to treat chronic inflammatory bowel diseases (e.g., ulcerative colitis)
laparoscopic surgery lap'ă-rō-skop'ik sūr'jĕr-ē	abdominal surgery using a laparoscope
laparotomy lap-ă-rot'ō-mē	incision into the abdomen
pan'krē-ă-tek'tō-mē	excision of the pancreas
polypectomy (see Fig. 12-15) pol'ip-ek'tŏ-mē	excision of polyps
proctoplasty prok'tō-plas-tē	repair of the anus and rectum

Programmed Review: Operative Terms

ANSWERS	REVIEW
gastr/o	12.113 Recall that the combining form for stomach is
-ectomy	The suffix for excision is The surgical excision of
gastrectomy	part or all of the stomach is called

ANSWERS	REVIEW
hemorrhoidectomy	12.114 Excision of hemorrhoids is called
pancreat/o pancreatectomy	12.115 The combining form for pancreas is Surgical excision of the pancreas is called
gloss/o glossectomy	12.116 The two combining forms for tongue are <i>lingulo</i> and Made from the latter, the term for surgical excision of all or part of the tongue is
cholecystectomy	12.117 Excision of the gallbladder is called When performed through a laparoscope, it is called cholecystectomy.
lobectomy	12.118 Excision of a lobe of the liver is called a hepatic
appendic/o appendectomy	12.119 The combining form for appendix is Surgical excision of the appendix is termed (<i>Note</i> : The "ic" in the combining form is removed to prevent the unwieldy "ic-ec" sound.)
polypectomy	12.120 The procedure of surgical excision of polyps is called
anal fistulectomy	12.121 Excision of an anal fistula is termed an
-plasty cheiloplasty esophagoplasty hernioplasty proctoplasty	12.122 Recall that the suffix for surgical repair or reconstruction is Surgical repair of the lip is termed Repair of the esophagus is called Repair of a hernia is called Repair of the anus and rectum is called
-rrhaphy glossorrhaphy herniorrhaphy	12.123 Recall that the suffix meaning suture is Suture of the tongue is therefore called Surgical repair and suture of a hernia is called
gastric resection	12.124 Resection typically involves less tissue removal than a full excision. The procedure of partial removal and repair of the stomach is called

ANSWERS	REVIEW
opening colostomy ileostomy	12.125 Recall that the operative suffix <i>-stomy</i> means creation of an The surgical creation of an opening in the colon through the abdominal wall, allowing stool to bypass a diseased portion of the colon, is called a The creation of an opening from the end of the ileum to the abdomen, done when the colon has been removed, is called an
gastroenterostomy	12.126 The term for the creation of an artificial opening between the stomach and the small intestine is built from the combining forms for both the stomach and the intestine. This procedure is called a
-tomy lapar/o laparotomy	12.127 The operative suffix meaning incision is Recall that the three combining forms meaning abdomen are <i>adomin/o</i> , <i>celi/o</i> , and Formed from the last of these, the term for an incision into the abdomen is
-centesis abdomin/o abdominocentesis paracentesis puncture of aspiration	12.128 Recall that the suffix meaning puncture for aspiration is The three combining forms meaning abdomen are <i>celi/o, lapar/o,</i> and Made from the last of these, the term for puncture of the abdomen for the aspiration of a fluid is Another general term for the aspiration of fluid from any cavity is Abdominal paracentesis describes the abdomen for the of fluid (e.g., the fluid that accumulates in ascites).
anastomosis	12.129 The term for the operative procedure in which two hollow vessels are joined is This technique is often used in bowel surgery.
laparoscopic	12.130 A general term for abdominal surgery performed using a laparoscope is surgery.
weight treatment, bariatric	12.131 The term describing surgery to the stomach and/or intestines to treat morbid obesity is formed by joining <i>baros</i> , a combining form meaning, with <i>-iatric</i> , a suffix meaning, creating the term surgery.



Self-Instruction: Therapeutic Terms

Study the following:

TERM	MEANING	
gastric lavage gas'trik lă-vahzh'	oral insertion of a tube into the stomach for examination and treatment, such as to remove blood clots from the stomach or to monitor bleeding (<i>lavage</i> = to wash)	
nasogastric (NG) intubation nā'sō-gas'trik in'tū-bā'shŭn	insertion of a tube through the nose and into the stomach for various purposes, such as to obtain a gastric fluid specimen for analysis	
COMMON THERAPEUTIC DRUG CLASSIFICATIONS		
antacid ant-as'id	drug that neutralizes stomach acid	
antiemetic an'tē-ĕ-met'ik	drug that prevents or stops vomiting	
antispasmodic an'tē-spaz-mod'ik	drug that decreases motility in the gastrointestinal tract to arrest spasm or diarrhea	
cathartic kă-thar'tik	drug that causes movement of the bowels; also called a laxative	



Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
gastric lavage	12.132 The word lavage means to wash. The therapeutic procedure in which a tube is inserted into the stomach from the mouth to remove fluids, such as blood clots, is termed
nasogastric intubation	12.133 A tube can be inserted through the nose to the stomach for purposes such as obtaining a gastric fluid specimen for analysis. This is called (NG)
anti-	12.134 Therapeutic drug classifications are often named for their actions against some process or condition. The common prefix meaning against is
pertaining to antiemetic	12.135 Recall that <i>-emesis</i> means vomiting and that the suffix <i>-ic</i> , which is often used in names of drug classes, means A drug that prevents or stops vomiting (against vomiting) is called an

ANSWERS	REVIEW
antispasmodic	12.136 Similarly, a drug used to stop spasms (of the gastrointestinal tract) is called an
antacid	12.137 A drug that works against excess stomach acid by neutralizing it is called an (<i>Note:</i> In this case, the <i>-ic</i> ending is not used.)
cathartic	12.138 The Greek word katharsis means purification by purging. A drug that purges the large intestine by stimulating a bowel movement is called a; such a drug is also called a laxative.

CHAPTER 12 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION		
Bx	biopsy		
C&S	culture and sensitivity		
CT	computed tomography		
EGD	esophagogastroduodenoscopy		
ERCP	endoscopic retrograde cholangiopancreatography		
EUS	endoscopic ultrasonography		
GERD	gastroesophageal reflux disease		
GI	gastrointestinal		
HAV	hepatitis A virus		
HBV	hepatitis B virus		
HCV	hepatitis C virus		
LLQ	left lower quadrant		
LUQ	left upper quadrant		
MRI	magnetic resonance imaging		
NG	nasogastric		
PUD	peptic ulcer disease		
RLQ	right lower quadrant		
RUQ	right upper quadrant		

CHAPTER 12 SUMMARY OF TERMS

The terms introduced in chapter 12 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

abdominal paracentesis/595

ab-dom'i-năl par'ă-sen-tē'sis

abdominal sonogram/589

ab-dom'i-năl son'ō-gram

abdominocentesis/595

ab-dom'i-nō-sen-tē'sis

anal fistula/576

ā'năl fis'tyū-lă

anal fistulectomy/595

ā'năl fis-tyū-lek'tŏ-mē

anastomosis/595

ă-nas'tō-mō'sis

ankyloglossia/575

ang'ki-lō-glos'ē-ă

anorexia/572

an-ō-rek'sē-ă

antacid/599

ant-as'id

antiemetic/599

an'tē-ĕ-met'ik

antispasmodic/599

an'tē-spaz-mod'ik

anus/567

ā'nŭs

aphagia/572

ă-fā'jē-ă

appendectomy/595

ap-pen-dek'tō-mē

appendicitis/576

ă-pen-di-sī'tis

ascending colon/566

ă-sen'ding kō'lon

ascites/572

ă-sī'tēz

bariatric surgery/595

bār-ē-at'rik sūr'jĕr-ē

barium enema/589

ba'rē-yŭm en'ĕ-mă

barium swallow/588

ba'rē-ŭm swahl'ō

biliary ducts/567

bil'ē-ār-ē dŭkts

biopsy (Bx)/585

bī'op-sē

buccal/572

bŭk'ăl

capsule endoscopy/586

kap'sūl en-dos'kŏ-pē

cardiac sphincter/566

kar'dē-ak sfingk'tĕr

cathartic/599

kă-thar'tik

cecum/566

sē'kŭm

cheeks/564

chēks

cheilitis/576

kī-lī'tis

cheiloplasty/595

kī'lō-plas-tē

cholangiogram/589

kō-lan'jē-ō-gram

cholangitis/579

kō-lan-jī'tis

cholecystectomy/595

kō'lē-sis-tek'tō-mē

cholecystitis/580

kō'lē-sis-tī'tis

cholecystogram/589

kō-lē-sis'tō-gram

choledocholithiasis/580

kō-led'ō-kō-lith-ī'ă-sis

cholelithiasis/580

kō' lē-li-thī'ă-sis

cirrhosis/580

sir-rō'sis

colitis/576

kō-lī'tis

colon/566

kō'lon

colonoscopy/586

kō-lon-os'kŏ-pē

colorectal polyps/577

kol'ō-rek'tăl pol'ips

colostomy/595

kō-los'tō-mē

computed tomography (CT) of the

abdomen/589

kom-pyū'tĕd tō-mog'ră-fē of the ab'dō-men

constipation/572

kon-sti-pā'shŭn

defecation/567

def-ĕ-kā'shŭn

descending colon/566

dē-send'ing kō'lon

diarrhea/572

dī-ă-rē'ă

diverticulitis/578

dī'vĕr-tik-yū-lī'tis

diverticulosis/578

dī'vĕr-tik-yū-lō'sis

diverticulum/578

dī-vĕr-tik'yū-lŭm

duodenal ulcer/576

dū'ō-dē' năl ŭl' sĕr

duodenum/566

dū-ō-dē'nŭm

dysentery/578

dis'en-ter-ē

dyspepsia/573

dis-pep'sē-ă

dysphagia/573

dis-fā' jē-ă

endoscopic retrograde cholangiopancre-

atography (ERCP)/588

en-dō-skop' ik ret' rō-grād kō-lan' jē-ō-pan-k rē-ă-

tog'ră-fē

endoscopic ultrasonography

(EUS)/591

en-dō-skop'ik ŭl'tră-sŏ-nog'ră-fē

endoscopy/586

en-dos' kŏ-pē

enteritis/578

en-tĕr-ī' tis

epigastric region/571

ep-i-gas' trik rē' jŭn

eructation/573

ē-rŭk-tā'shŭn

esophageal varices/576

ē-sof'ă-jē'ăl var'i-sēz

esophagitis/576

ē-sof-ă-jī'tis

esophagogastroduodenoscopy

(EGD)/586

ē-sof'ă-gō-gas'trō-dū'ō-den-os-kŏ-pē

esophagoplasty/595

ē-sof'ă-gō-plas-tē

esophagus/566

ē-sof'ă-gйs

excisional biopsy/585

ek-sizh'ŭn-ăl bī' op-sē

feces/567

fē'sēz

flatulence/573

flat'y ū-lents

fluoroscopy/588

flōr-os'kŏ-pe

gallbladder/567

gawl' blad-ĕr

gastrectomy/596

gas-trek'tŏ-mē

gastric lavage/599

gas'trik lă-vahzh'

gastric resection/596

gas'trik rē-sek'shŭn

gastric ulcer/576

gas'trik ŭl'sĕr

gastritis/576

gas-trī'tis

gastroenterostomy/596

gas'trō-en-tĕr-os'tŏ-mē

gastroesophageal reflux disease

(GERD)/576

gas' trō-ē-sof-ă-jē'ăl rē' f lŭks di-zēz'

gingivitis/576 jin-ji-vī'tis

glossectomy/596 glos-sek'tŏ-mē glossitis/576 glos-sī'tis

glossorrhaphy/596

glo-sōr'ă-fē gums/566 gŭmz

halitosis/573 hal-i-tō'sis

hematemesis/573 hē-mă-tem'ĕ-sis hematochezia/573 hē' mă-tō-kē'zē-ă hemorrhoid/578

hem'ŏ-royd

hemorrhoidectomy/596 hem'ō-roy-dek' tŏ-mē

hepatic lobectomy/596 he-pat'ik lō-bek'tŏ-mē

hepatitis A/580 hep-ă-tī'tis A

hepatitis B/581 hep-ă-tī'tis B

hepatitis C/581 hep-ă-tī'tis C

hepatomegaly/573 hep'ă-tō-meg'ă-lē

hernia/578 hĕr'nē-ă

hernioplasty/596 hĕr'nē-ō-plas-tē

herniorrhaphy/596

hĕr'nē-ōr'ă-fē

hiatal hernia/578 hī-ā'tăl hĕr'nē-ă

hyperbilirubinemia/573 hī'pĕr-bil'i-rū-bi-nē'mē-ă

hypochondriac regions/570 hī-pō-kon' drē-ak rē' jŭnz

hypogastric region/571

hī-pō-gas'trik rē' jйn hypoglossal/573 hī-pō-glos'ăl

icterus/573 ik'tĕr-ŭs

ileitis/579 il-ē-ī'tis

ileostomy/596 il-ē-os'tŏ-mē ileum/566 il'ē-ŭm

incarcerated hernia/578 in-kar'sĕr-ā-tĕd hĕr'nē-ă incisional biopsy/585 in-sizh'ŭn-ăl bī'op-sē inguinal hernia/578 ing'gwi-năl hĕr'nē-ă inguinal regions/571

ing'gwi-năl rē'jŭnz intussusception/579 in'tŭs-sŭs-sep'shŭn

jaundice/573 jawn'dis

jejunum/566 jĕ-jū'nŭm

laparoscopic cholecystectomy/595 lap'ă-rō-skop' ik kō' l ē-sis-tek' tō-mē

laparoscopic surgery/596 lap'ă-rō-skop'ik sūr' jĕr-ē

laparoscopy/588 lap-ă-ros'kŏ-pē laparotomy/596 lap-ă-rot'ō-mē

large intestine/566

larj in-tes'tin lips/564 lipz

liver/567 liv'ĕr

lower gastrointestinal (GI) series/589

lō'ĕr gas'trō-in-tes' ti-năl sēr'ēz

lumbar regions/571

lŭm'bar rē'jŭnz

magnetic resonance imaging (MRI)/588

mag-net'ik rez'ō-nănts im'ă-jing

melena/573 me-lē'nă

mouth/564

mowth

nasogastric (NG) intubation/599

nā'sō-gas' trik in'tū-bā'shŭn

nausea/573 naw'zē-ă

needle biopsy/586

nē'dĕl bī'op-sē

omentum/567 ō-men'tŭm

oral cavity/564 ōr'ăl kav'i-tē

palate/564 pal'ăt

pancreas/567 pan'krē-as

pancreatectomy/596 pan'krē-ă-tek'tō-mē

pancreatitis/581 pan'krē-ă-tī'tis

parotitis/576 par-ō-tī't is

pediculated polyp/577 pĕ-dik-yū-lā'tĕd pol'ip

peptic ulcer disease (PUD)/576

pep'tik ŭl'sĕr di-zēz'

peritoneal cavity/567 per'i-tō-nē'ăl kav'i-tē

peritoneum/567 per'i-tō-nē'ŭm peritonitis/579

per'i-tō-nī' tis pharynx/566 fă'ringks

polypectomy/596 pol'ip-ek'tŏ-mē

proctitis/579

prok-tī'tis

proctoplasty/596 prok'tō-plas-tē

proctoscopy/586

prok-tos'kŏ-pē

pyloric sphincter/566

pī-lōr'ik sfingk'tĕr

pyloric stenosis/576 pī-lōr'ik ste-nō'sis

radiography/588 rā'dē-og'ră-fē

rectal ampulla/566 rek'tăl am-pul'lă

rectum/566 rek'tŭm

salivary glands/564 sal'i-vār-ē glanz

sessile polyp/577

ses'il pol'ip

sialoadenitis/576 sī'ā-lō-ad-ĕ-nī' tis

sigmoid colon/566 sig' moyd kō' lon

sigmoidoscopy/586 sig-moy-dos' kŏ-pē

small bowel series/588 smawl how'el sēr'ēz

small intestine/566 smawl in-tes' tin

sonography/589 sŏ-nog'ră-fē

steatorrhea/573 stē'ă-tō-rē'ă

stomach/566

stŏm'ăk

stomatitis/576 stō-mă-tī' tis

stool culture and sensitivity (C&S)/591

stūl kŭl' chŭr and sen-si-tiv'i-tē

stool occult blood study/591

stūl ŏ-kŭlt' blŭd stŭd'ē

strangulated hernia/578

strang'gyū-lā-tĕd hĕr'nē-ă

sublingual/573 sŭb-ling'gwăl

teeth/566

tēth

tongue/564

tŭng

transverse colon/566

trans-vĕrs' kō'lon

ulcerative colitis/577

ŭl'sĕr-ă-tiv kō-lī'tis

umbilical hernia/578

йт-bil'i-kăl hĕr'n ē-ă

umbilical region/571 йт-bil'i-kăl rē'jйп

upper gastrointestinal (GI)

series/588

up'ĕr gas'trō-in-tes' ti-năl sēr'ēz

uvula/564

 $\bar{u}'vy\bar{u}$ - $l\breve{a}$

vermiform appendix/566

vĕr'mi-fōrm ă-pen'diks

volvulus/579

vol'vyū-lŭs



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

sublingual

sub / lingu / al

DEFINITION: below or under/tongue/pertaining to

1.	transabdomi	nal		
		/	/	
	P DEFINITION:	R		
2.	proctocolect			
		/	/	
		R		S
3.	sialolithoton	ny		
		/	/	
		CF		S
4.	glossorrhapł			
		•		
	CF			
	DEFINITION:			
5.	hematemesis	S		
		/		
	R	S		
	DEFINITION:			
6.	cheilostoma	toplasty		
		/	/	
		CF		S
	DEFINITION:			
7.	appendicitis			
		/		
	R	S		
	DEFINITION:			

8.	celiac		
		S	
9.	cholangiogram		/
	R	CF	
10.	anorectal/		/
	CF	R	S
11.	enterocolitis/	,,	/
	CF DEFINITION: _	R	S
12.	orolingual/	, ,	/
	CF	R	S
13.	dysphagia	, 	
	P	R	S
	pancreatoduo	denostomy	
	CF DEFINITION: _	CF	S
15.	hernioplasty/		
	CF	S	
16.	biliary		
	R DEFINITION:	S	

DEFINITION:

Name the anatomic divisions of the abdomen:

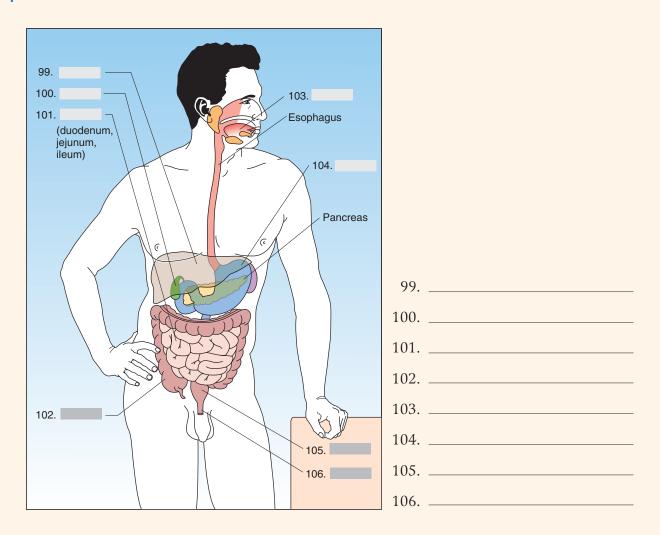
54.	lower lateral groin regions	
55.	upper lateral regions beneath the ribs	
	upper middle region below the sternum	

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57. region b	elow the navel	
	ateral regions	
59. region o	f the navel	
Name the fou	r clinical divisions of the ab	odomen:
Write the lett	er of the matching term in	the space provided:
64. cathartic		a. cholecystectomy
65. herniorr	haphy	b. barium swallow
66. appendi	citis	c. bariatric surgery
67. lower ga	strointestinal series	d. appendectomy
68. icterus		e. colostomy
69. peptic u	lcer disease	f. hernioplasty
70. abdomir	nocentesis	g. H. pylori bacterial infection
71. parotitis	_	h. barium enema
72. sublingu	ıal	i. mumps
73. upper ga	astrointestinal series	j. paracentesis
74. ulcerativ	re colitis	k. jaundice
75. cholelith	niasis	l. hypoglossal
76. morbid	obesity	m. laxative
•		examine within the body. Name the specific type of
-	ed to examine the body pa	rts listed here:
77. abdome:	n	
78. anus		
79. sigmoid	colon	
80. colon		
Write out the	expanded term for each ab	obreviation:
81. NG		
82. ERCP		
84. LUQ		
85. GI		
86. MRI		
87. EGD		

Circle the combining form that corresponds to the meaning given:

88. abdomen	gastr/o	lapar/o	stomat/o
89. tongue	gloss/o	proct/o	gingiv/o
90. small intestine	col/o	appendic/o	enter/o
91. teeth	dent/i	chol/e	lingu/o
92. stomach	lapar/o	stomat/o	gastr/o
93. cheek	bucc/o	or/o	proct/o
94. bile	col/o	celi/o	chol/e
95. mouth	gastr/o	stomat/o	lapar/o
96. liver	hepat/o	nephr/o	ren/o
97. eat	phas/o	phag/o	gloss/o
98. rectum	an/o	proct/o	col/o

Write in the term components related to each of the gastrointestinal organs in the spaces provided:



Circle the correct spelling:

107. anorexia	annorexia	anorrexia
108. asites	ascitis	ascites
109. hematochesia	hemochezia	hematochezia
110. icterus	ickterus	icteris
111. ankleoglossia	ankyloglosia	ankyloglossia
112. volvulis	volvulus	volvolus
113. cirhosis	cirrhosus	cirrhosis
114. glossectomy	glozectomy	glosectomy
115. hernniorhaphy	herniorraphy	herniorrhaphy
116. hemorroidectomy	hemroidectomy	hemorrhoidectomy
117. anteacid	anacid	antacid
118. antiemetic	antemetic	antaemetic
119. cathartik	cathartic	catarthic
120. melena	melenna	melana

Give the noun used to form each adjective:

121. fecal	
122. icteric	
123. endoscopic	
124. hemorrhoidal	
125. pancreatic	



MEDICAL RECORD ANALYSIS

Medical Record 12-1

EMERGENCY ROOM REPORT

S: This is a 36 y.o. ♂ with a complaint of abdominal pain. He describes having lifted a 75-lb. beam yesterday at work. He noticed a sharp pain in his navel but continued to work. The pain intensified as the day went on and persisted through last night and today. He claims his navel now bulges forward. He denies fever, chills, dysphagia, anorexia, or vomiting.

PMH: No hospitalizations or surgeries

Meds: none Allergies: NKDA

O: T 97.5°F, P 87, R 18, BP 128/86

WDWN male in moderate distress secondary to abdominal pain. Upon palpation, the abdomen is soft, with spasm of the muscles in the periumbilical region, and there is an obvious bulge in the umbilicus. The omentum is also palpable. There is no hepatosplenomegaly.

- A: Incarcerated umbilical hernia
- P: Admit for STAT umbilical hernia repair

QUESTIONS ABOUT MEDICAL RECORD 12-1

- 1. Which of the following summarizes the subjective information?
 - a. pain in stomach
 - b. pain in abdomen
 - c. pain in the groin area
 - d. generalized abdominal pain with chills and fever
 - e. stomach pain and has difficulty swallowing
- 2. What kind of an appetite does the patient have?
 - a. normal
 - b. increased
 - c. decreased

- 3. What is the condition of the patient's liver?
 - a. not stated
 - b. enlarged
 - c. not enlarged
 - d. inflamed
 - e. ruptured
- 4. What were the objective findings?
 - a. involuntary contraction of the muscles around the navel
 - b. pouching of the muscles under the
 - c. contraction of abdominal muscles and enlargement of the spleen
 - d. protrusion of the navel and enlargement of the liver
 - e. pouching of the stomach and omentum

- 5. Which of the following best describes the diagnosis?
 - a. a portion of the bowel has protruded through the abdominal wall and been cut off from circulation
 - b. one part of the intestine has prolapsed into the lumen of the adjoining part
 - c. a portion of the intestine has protruded through a weakness in the abdominal wall around the navel and is swollen and fixed in a sac
 - d. a portion of the bowel has twisted on itself, causing obstruction
 - e. the stomach and small intestine are inflamed

- 6. Which of the following medical terms describes the planned surgery?
 - a. laparotomy
 - b. gastroenterostomy
 - c. hernioplasty
 - d. ileostomy
 - e. abdominal paracentesis

Medical Record 12-2

FOR ADDITIONAL STUDY

Mr. Antonio Villata undergoes a comprehensive physical examination each year as part of a wellness program promoted by his employer. This year, after a routine sigmoidoscopic exam revealed a polyp in his intestine, he was referred to Dr. Blain, a gastroenterologist at Central Medical Center, for evaluation. Medical Record 12-2 is a procedure dictated by Dr. Blain after his evaluation and treatment of Mr. Villata in the endoscopy suite at Central Medical Center.

Read Medical Record 12-2 (page 617), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 12-2

1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below:				
	cannulated				
	verge				
	snare				
2.	Describe the screening procedure performed by Dr. Kolima prior to Mr. Villata's referral to Dr. Blain:				
3.	In your own words, not using medical terminology, briefly describe the procedure performed by Dr. Blain and the indications for which the patient was referred:				
4.	What position was Mr. Villata in when the procedure was performed?				
	a. lying flat, face down				
	b. lying flat, face up				
	c. lying on his side				
	d. sitting				
5.	Put the following actions in order by numbering them from 1 to 12:				
	location of the cecum was confirmed by internal and external landmarks				
	video colonoscope was inserted in the rectum and advanced carefully to the cecum				
	hemorrhoids were noted				
	terminal ileum was cannulated				
	scope was straightened, air aspirated, and scope withdrawn				
	scattered diverticula were noted in the sigmoid colon				
	lining of the colon was thoroughly inspected				

616	MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE
	polyp was removed using a snare and submitted to the pathology lab for biopsy
	pediculated, 4-mm polyp was seen in the sigmoid colon
	scope was brought back to the rectum and retroflexed
	patient was placed in the left lateral decubitus position
	scope was brought back to the cecum and then gradually withdrawn
6.	Translate the statement "a pediculated 4-mm polyp was seen in the sigmoid colon":
7.	How many inches from the anal verge was the polyp?
8.	Copy the sentence from the medical record that indicates how the polypectomy was performed:
9.	Name and describe the condition for which a high-fiber diet was indicated in the plan:
10.	Describe the third condition Dr. Blain listed in his assessment of Mr. Villata. Include the degree of severity and any treatment planned:
11.	In your own words, describe the recommendations outlined in the plan that will be made depending on the results of the biopsy:

Medical Record 12-2: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

ENDOSCOPY LABORATORY REPORT

PATIENT: Villata, Antonio DATE: 4/29/20xx

PROCEDURE PERFORMED: COLONOSCOPY WITH BIOPSY

INDICATIONS: This is a 54-year-old white male referred to me for evaluation of a polyp found during a screening sigmoidoscopy by Dr. Kolima. A complete colonoscopy is being done to remove the polyp and rule out other concurrent lesions.

CONSENT: The procedure and its risks including bleeding, infection, perforation, and sedative reaction have been explained to the patient, and informed consent was obtained.

INSTRUMENT USED: Olympus video colonoscope.

MEDICATIONS GIVEN: Demerol 50 mg and Versed 3 mg in divided doses. The patient had stable vital signs. A Fleets Phospho-Soda prep provided good visualization.

PROCEDURE: The patient was placed in the left lateral decubitus position. After adequate sedation, a rectal examination was performed. No masses were felt. The video colonoscope was inserted in the rectum and advanced carefully to the cecum. The location of the cecum was confirmed by internal and external landmarks, and photographic documentation was obtained. The terminal ileum was then cannulated. This was normal to about 2 cm. The scope was brought back to the cecum and then gradually withdrawn. The lining of the colon was thoroughly inspected. There were scattered diverticula noted in the sigmoid colon. A pediculated 4 mm polyp was seen in the sigmoid colon at 30 cm from the anal verge. This was removed using a snare and submitted to pathology lab for biopsy. The scope was brought back to the rectum and retroflexed. Minimal hemorrhoids were noted. The scope was straightened, air was aspirated, and the scope was withdrawn. The patient tolerated the procedure well.

IMPRESSION:

- 1. POLYP ON SIGMOID COLON AT 30 CM.
- 2. SIGMOID DIVERTICULAR DISEASE.
- 3. HEMORRHOIDS.

PLAN:

- 1. A high-fiber diet is indicated.
- 2. Await pathology results. If adenomatous, a full colonoscopy is indicated in 3 years. If hyperplastic or normal, a colonoscopy is indicated in 10 years.

Roger Blain, M.D.

RB:mw

D: 4/29/xx

T: 5/1/xx

cc: R. Kolima, M.D.

ANSWERS TO PRACTICE EXERCISES

- 1. trans/abdomin/al R S across or through/abdomen/ pertaining to
- 2. procto/col/ectomy CF R anus and rectum/colon/excision or removal
- 3. sialo/litho/tomy CF CF saliva/stone/incision
- 4. glosso/rrhaphy CF tongue/suture
- 5. hemat/emesis R
- blood/vomiting 6. cheilo/stomato/plasty

CF CF lip/mouth/surgical repair or reconstruction

- 7. appendic/itis R appendix/inflammation
- 8. celi/ac R S abdomen/pertaining to
- 9. chol/angio/gram R CF bile/vessel/record
- 10. ano/rect/al CF R S anus/rectum/pertaining
- 11. entero/col/itis CF R S small intestine/colon/ inflammation
- 12. oro/lingu/al CF R S mouth/tongue/ pertaining to

- 13. dys/phag/ia R S painful, difficulty, or faulty/eat or swallow/condition of
- 14. pancreato/duodeno/stomy CF CF pancreas/duodenum/ creation of an opening
- 15. hernio/plasty CF hernia/surgical repair or reconstruction
- 16. bil/iary R S bile/pertaining to
- 17. gastro/esophag /eal CF R stomach/esophagus/ pertaining to
- 18. steato/rrhea CF S fat/discharge
- 19. dent/algia R S teeth/pain
- 20. pyloro/spasm CF pylorus (gatekeeper)/involuntary contraction
- 21. hepato/tox/ic R Sliver/poison/pertaining
- 22. ileo/jejun/itis CF R ileum/jejunum/ inflammation
- 23. bucco/gingiv/al
- 24. chole/cyst/ectomy

CF R bile/bladder or sac/ excision (removal)

cheek/gum/pertaining to

- 25. peri/rect/al P R S around/rectum/ pertaining to
- 26. gastritis
- 27. anorexia
- 28. aphagia
- 29. buccal
- 30. flatulence
- 31. hernia
- 32. melena
- 33. eructation
- 34. capsule endoscopy
- 35. colitis
- 36. pediculated polyp
- 37. ascites
- 38. cholecystitis
- 39. steatorrhea
- 40. diverticulitis
- 41. gastric ulcer
- 42. hepatomegaly
- 43. ankyloglossia
- 44. incarcerated
- 45. excisional
- 46. hemigastrectomy
- 47. appendicitis
- 48. pyloric stenosis
- 49. stomatoplasty
- 50. cholangiogram
- 51. hyperbilirubinemia
- 52. gastric resection
- 53. diverticulosis
- 54. inguinal regions
- 55. hypochondriac regions
- 56. epigastric region
- 57. hypogastric region
- 58. lumbar regions
- 59. umbilical region
- 60. right upper quadrant (RUQ)
- 61. left upper quadrant (LUQ)
- 62. right lower quadrant (RLQ)
- 63. left lower quadrant (LLQ)
- 64. m
- 65. f

66. d 67. h	84. left upper quadrant 85. gastrointestinal	104. gastr/o 105. proct/o or rect/o
68. k	86. magnetic resonance	106. an/o
69. g	imaging	107. anorexia
70. j	87. esophagogastroduo-	108. ascites
71. i	denoscopy	109. hematochezia
72. 1	88. lapar/o	110. icterus
73. b	89. gloss/o	111. ankyloglossia
74. e	90. enter/o	112. volvulus
75. a	91. dent/i	113. cirrhosis
76. c	92. gastr/o	114. glossectomy
77. laparoscope	93. bucc/o	115. herniorrhaphy
78. anoscope or procto-	94. chol/e	116. hemorrhoidectomy
scope	95. stomat/o	117. antacid
79. sigmoidoscope	96. hepat/o	118. antiemetic
80. colonoscope	97. phag/o	119. cathartic
81. nasogastric	98. proct/o	120. melena
82. endoscopic retrograde	99. hepat/o or hepatic/o	121. feces
cholangiopancreatogra-	100. cholecyst	122. icterus
phy	101. enter/o	123. endoscopy
83. gastroesophageal reflux	102. col/o or colon/o	124. hemorrhoid
disease	103. gloss/o or lingu/o	125. pancreas
	_	

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 12-1: Emergency Room Report

1. b 2. a 3. c 4. a 5. c 6. c

Medical Record 12-2: For Additional Study

See CD-ROM for answers.





CHAPTER 13

Urinary System

✓ Chapter 13 Checklist	LOCATION
☐ Read Chapter 13: Urinary System and complete all programmed review segments.	pages 621-649
 Review the starter set of flash cards and term components related to Chapter 13. 	back of book
☐ Complete the Chapter 13 Practice Exercises and Medical Record Analysis 13-1.	pages 653-659
☐ Complete Medical Record Analysis 13-2 For Additional Study.	pages 660-663
☐ Complete the Chapter 13 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 13 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 13 terms.	CD-ROM

URINARY SYSTEM OVERVIEW

The urinary system includes the organs and structures involved in the secretion and elimination of urine (Fig. 13-1):

- The kidneys filter the blood and secrete water and nitrogenous wastes in urine.
- The kidneys regulate the levels of critical elements, such as water, sodium, and potassium, in the blood.
- The ureters carry urine from the kidney.
- 🌞 The urinary bladder holds urine until it is expelled.

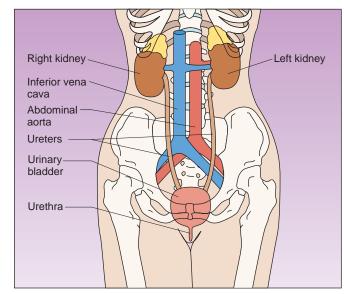


FIGURE 13-1 Urinary system.



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
albumin/o	protein
bacteri/o	bacteria
cyst/o, vesic/o	bladder or sac
dips/o	thirst
glomerul/o	glomerulus (small ball)
gluc/o, glucos/o, glyc/o	glucose (sugar)
ket/o, keton/o	ketone bodies
lith/o	stone
meat/o	meatus (opening)
nephr/o, ren/o	kidney
pyel/o	renal pelvis (basin)
py/o	pus
ureter/o	ureter
urethr/o	urethra
ur/o, urin/o	urine



Programmed Review: Combining Forms

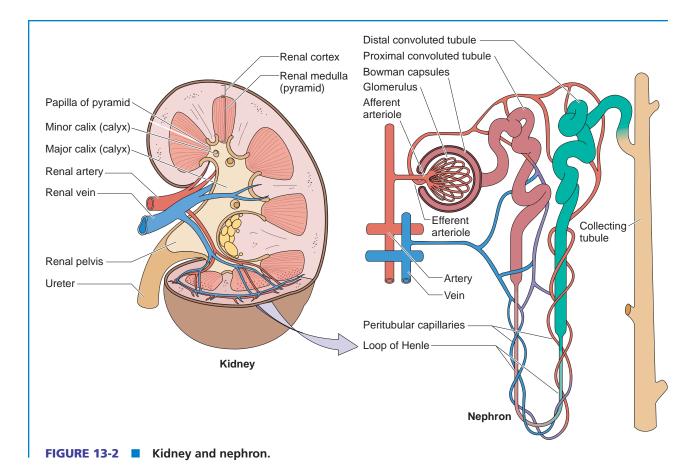
ANSWERS	REVIEW
albumin/o resembling, albuminoid	13.1 The combining form meaning protein comes from the Latin term for egg white: albumen. That combining form is Recall that the suffix -oid means Therefore, the term means resembling albumin (referring to any protein).
bacteri/o against pertaining to antibacterial	13.2 The combining form meaning bacteria is Using the prefix <i>anti-</i> , meaning, and the suffix <i>-al</i> , meaning, an agent such as a soap that kills bacteria is called an
-scope cystoscope	13.3 The combining form <i>cyst/o</i> means sac orUsing the suffix referring to an instrument for examination,, the term for the special kind of endoscope that is used to examine the bladder is
vesic/o -tomy vesicotomy or cystotomy	13.4 Another combining form meaning bladder or sac is (from the Latin word vesica, meaning bladder). Using the operative suffix for incision,, the term for an incision into the bladder is
dips/o many, condition of polydipsia	13.5 The combining form meaning thirst (from the Greek word dipsa) is Recall that the suffix <i>poly-</i> means The suffix <i>-ia</i> refers to a Thus, the term for excessive thirst (the need to drink many times) is
urine -logist urologist	13.6 <i>Ur/o</i> is a combining form meaning Recall that the suffix for a specialist in the study of a particular area is The physician who specializes in conditions of the urinary system is therefore called a Used to form the adjective urinary, a second combining form for urine is
urin/o	·
glucos/o	13.7 The three combining terms for sugar are <i>glyc/o</i> , <i>gluc/o</i> , and Glucose is a form of sugar that is found in the blood and used for energy. Because the combining form <i>ur/o</i>
urine	means and the suffix -ia means a

ANSWERS	REVIEW
condition of sugar	, the term glucosuria therefore refers to a condition of in the urine.
glomerul/o, glomeruli	13.8 The combining form that means glomerulus (a small, ball-shaped cluster of capillaries in the kidney) is The plural of glomerulus is Because each nephron in the kidney has a glomerulus, each kidney has as many as 1,000,000 glomeruli.
keton/o urine condition of ketonuria	13.9 The two combining forms meaning ketone bodies are <i>ket/o</i> and Ketone bodies are chemical substances resulting from metabolism. Recall that <i>ur/o</i> is a combining form meaning Combined with <i>-ia,</i> the suffix meaning, the term for a condition of ketone bodies in the urine is
increase ketosis	13.10 Recall that the suffix <i>-osis</i> means condition or Therefore, the term for the condition of increased ketone bodies in the body is
lith/o	13.11 The combining form meaning stone is (from the Greek word for stone, lithos). The suffix meaning formation of, or presence of, is <i>-iasis</i> . Therefore, the term for the formation of any stone is
ureter/o ureterolithiasis	13.12 Two similar words refer to different urinary system structures that carry urine. The ureters carry urine from the kidneys to the bladder. The urethra carries urine from the bladder to the outside of the body. The combining form for ureter is The condition of having a stone form in the ureter is
urethr/o -algia -dynia urethralgia urethrodynia	13.13 The combining form for urethra is Recall that there are two suffixes meaning pain: and Each suffix is used to form synonyms meaning pain in the urethra: or
meat/o urine	13.14 The combining form that means opening is (from the Latin word meatus). The urethral meatus is the structure through which leaves the body.



Self-Instruction: Anatomic Terms

TERM	MEANING
kidneys (Fig. 13-2) <i>kid'nēz</i>	two structures located on each side of the lumbar region that filter blood and secrete impurities, forming urine
cortex kōr' teks	outer part of the kidney (<i>cortex</i> = bark)
hilum hī' lŭm	indented opening in the kidney where vessels enter and leave
medulla me-dūl'ă	inner part of the kidney
calices or calyces kal' i-sēz	ducts that carry urine from the nephrons to the renal pelvis $(kalyx = \text{cup of a flower})$
nephron nef' ron	microscopic functional units of the kidney, comprised of kidney cells and capillaries, each of which is capable of forming urine



TERM	MEANING
glomerulus glō-mer'yū-lŭs	small, ball-shaped cluster of capillaries located at the top of each nephron
Bowman capsule bō' măn kap' sūl	top part of the nephron that encloses the glomerulus
renal tubule rē'năl tū' by ūl	stem portion of the nephron
ureter yū-rē' tĕr	tube that carries urine from the kidney to the bladder
renal pelvis rē'năl pel'vis	basin-like portion of the ureter within the kidney
ureteropelvic junction yū-rē'tĕr-ō-pel'vĭk jŭngk'shŭn	point of connection between the renal pelvis and the ureter
urinary bladder yūr'i-nār-ē blad'ĕr	sac that holds the urine
urethra yū-rē' thră	single canal that carries urine to the outside of the body
urethral meatus yū-rē' thrăl mē-ā' tŭs	opening in the urethra to the outside of the body

TERM	MEANING
urine yūr'in	fluid produced by the kidneys, containing water and waste products
urea yū-rē'ă	waste product formed in the liver, filtered out of the blood by the kidneys, and excreted in urine
creatinine krē-at' i-nēn	waste product of muscle metabolism, filtered out of the blood by the kidneys, and excreted in urine

Programmed Review: Anatomic Terms

ANSWERS	REVIEW
kidneys cortex medulla medullae	13.18 The two structures to the sides of the lumbar region that filter blood to remove wastes are the The outer part of the kidney is called the (from a word originally meaning bark, as tree bark is the outer part of a tree trunk). The inner part, where the urine is collected, is called the (This same term, meaning middle, is used to refer to the middle part of a number of body structures.) The plural of medulla is
hilum	13.19 The indented opening in the kidney where vessels enter and leave is called the
nephrons glomerulus capsule renal tubule kidney	13.20 Inside the cortex of the kidneys are the microscopic functional units that form urine; these units are called At the top of each nephron is a ball-shaped cluster of capillaries, called a, that carries blood to and away from each nephron. Enclosing each glomerulus is a structure called the Bowman From the Bowman capsule, the urine flows through the Recall that the adjective renal refers generally to the
urine urea creatinine	13.21 The fluid secreted by the nephrons that contains water and waste products is called The waste product formed in the liver but filtered from the blood in the kidneys is called A second waste product filtered from the blood in the kidneys is a product of muscle metabolism:
calices or calyces	13.22 Urine flows through the renal tubules from each nephron through a system of ducts called The singular form of this term is The calices (also spelled calyces)

ANSWERS	REVIEW
	carry the urine to the renal pelvis, the basin-like portion of the ureter within the kidney.
renal pelvis ureteropelvic	13.23 The basin-like portion of the ureter collecting urine from the calyces is called the The point of connection between the renal pelvis and the ureter is called the junction.
ureter	13.24 From the renal pelvis, urine moves through the to the bladder, a sac that holds the urine before its excretion. Each kidney has one ureter, which exits the kidney at the same point where the arteries and veins enter it, at the of the kidney.
bladder urethra	13.25 The sac that holds urine is called the urinary From the bladder, the urine exits through a canal called the
urethral meatus	13.26 Made from the combining forms meaning urethra and opening, the opening from the urethra to the outside of the body, through which urine leaves the body, is called the

Self-Instruction: Symptomatic Terms

TERM	MEANING
albuminuria al-byū-mi-nyū'rē-ă proteinuria prō-tē-nū'rē-ă	presence of albumin in the urine, such as occurs in renal disease or in normal urine after heavy exercise
anuria an-yū' rē-ă	absence of urine formation
bak-tēr-ē-yū'rē-ă	presence of bacteria in the urine
dysuria dis-yū'rē-ă	painful urination
enuresis en-yū-rē'sis	involuntary discharge of urine, usually referring to a lack of bladder control
nocturnal enuresis nok-tūr' năl en-yū-rē' sis	bed-wetting during sleep

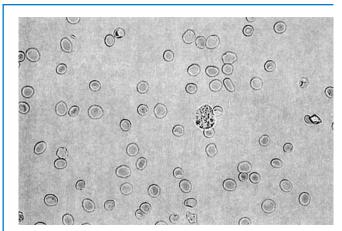


FIGURE 13-3 Hematuria. Microscopic view of urine showing a large number of red blood cells. One lone white blood cell is present in the center of the field.

TERM	MEANING
glucosuria glū-kō-syū'rē-ă glycosuria glī'kō-sū'rē-ă	glucose (sugar) in the urine
hematuria (Fig. 13-3) hē-mă-tyū'rē-ă	presence of blood in the urine
incontinence in-kon'ti-nents	involuntary discharge of urine or feces
stress urinary incontinence (SUI) stres yūr'i-nār-ē in- kon'ti-nents	involuntary discharge of urine with coughing, sneezing, and/or strained exercise
ketonuria kē-tō-nyū'rē-ă	presence of ketone bodies in the urine
ketone bodies kē' tōn bod'ēz ketone compounds kē' tōn kom' powndz	acetone, beta-hydroxybutyric acid, and acetoacetic acid; products of metabolism that appear in the urine from the body's abnormal utilization of carbohydrates, such as occurs in uncontrolled diabetes or starvation
nocturia nok-tū' rē-ă	urination at night
oliguria ol-i-gū' rē-ă	scanty production of urine
polyuria pol-ē-yū'rē-ă	condition of excessive urination
pyuria (Fig. 13-4) <i>pī-yū'rē-ă</i>	presence of white cells in the urine, usually indicating infection
urinary retention yūr' i-nār-ē rē-ten' shŭn	retention of urine resulting from an inability to void (urinate) naturally because of spasm or obstruction

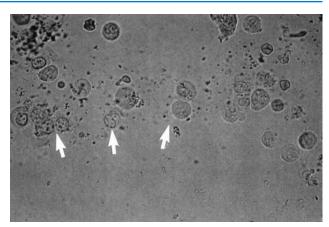


FIGURE 13-4 Pyuria. Microscopic view of urine showing the presence of white blood cells (arrows).

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
urine condition of bacteriuria	13.27 <i>Ur/o</i> is a combining form for The suffix <i>-ia</i> refers to a Many symptomatic terms therefore end in <i>-uria</i> , referring to the presence of abnormal amounts of a substance in the urine. For example, the presence of bacteria in the urine is called
hematuria	13.28 A combining form meaning blood is <i>hemat/o</i> . The presence of blood in the urine is called
py/o pyuria	13.29 The combining form for pus is Pus consists mostly of white blood cells that fight infection. The presence of white blood cells in the urine is therefore termed, which often indicates a urinary tract infection (UTI).
albumin/o albuminuria	13.30 The combining form meaning protein is The presence of protein in the urine is therefore termed Another term for protein in the blood is proteinuria.
without anuria	13.31 The ending <i>-uria</i> is also used with other urinary conditions, not just with those indicating the presence of some substance in the urine. The prefix <i>an-</i> means; therefore, the term for absence of urine formation (being without urine) is

ANSWERS	REVIEW
nocturia	Another term modified by <i>-uria</i> describes excessive voluntary urination at night:
within enuresis nocturnal	13.32 The term uresis is synonymous with urination. When combined with <i>en-</i> , the prefix meaning, the term referring to involuntary urinating because of lack of bladder control is An involuntary discharge of urine during sleep is called enuresis (bed-wetting).
glycosuria	13.33 The presence of glucose (sugar) in urine is not a normal finding. The two synonyms used to indicate the presence of sugar in urine are glucosuria and
painful dysuria	13.34 Recall that the prefix <i>dys-</i> means difficult, faulty, or The term for a condition of painful urination is
deficient	13.35 Recall that <i>oligo</i> - is a prefix meaning few or
oliguria	Therefore, the term for a condition of scanty (deficient) production of urine is (Recall that the final vowel is occasionally dropped from the prefix when joined with a root that begins with a vowel.)
urine polyuria	13.36 Again, <i>-uria</i> is a common word ending that refers to a condition of It is linked to the prefix meaning many to describe a condition of excessive urination:
urine incontinence stress	13.37 Enuresis is the involuntary discharge of; however, the general term for the involuntary discharge of urine or feces is When an involuntary discharge of urine occurs during the stress of coughing, sneezing, or exercise, it is called urinary incontinence (SUI).
urine	13.38 Urinary retention is the retention of resulting from an inability to void (urinate) naturally because of spasm, an obstruction, or other factors.
ketone	13.39 The combining form <i>ket/o</i> means bodies or ketone compounds. These are metabolic products that may appear in the urine because of abnormal use of carbohydrates. The condition in which ketone bodies appear in the urine is called
ketonuria	which ketone bodies appear in the urine is called



Self-Instruction: Diagnostic Terms

TERM	MEANING
adult polycystic kidney disease (APKD) ă-dŭlt' pol-ē-sis' tik kid' nē di-zēz'	inherited condition of multiple cysts that gradually form in the kidney, causing destruction of normal tissue that leads to renal failure; diagnosed in adults presenting with hypertension, kidney enlargement, and recurrent urinary tract infections (UTIs)
glomerulonephritis glō-mer'yū-lō-nef-rī'tis	form of nephritis involving the glomerulus
hydronephrosis (Fig. 13-5) <i>hī' drō-ne-frō' sis</i>	pooling of urine in dilated areas of the renal pelvis and calices of one or both kidneys caused by an obstructed outflow of urine
nephritis ne-frī'tis	inflammation of the kidney
pyelonephritis pī'ĕ-lō-ne-frī'tis	inflammation of the renal pelvis
nephrosis ne-frō' sis	degenerative disease of the renal tubules
nephrolithiasis (Fig. 13-6) nef'rō-li-thī'ă-sis	presence of a renal stone or stones
cystitis sis-tī' tis	inflammation of the bladder

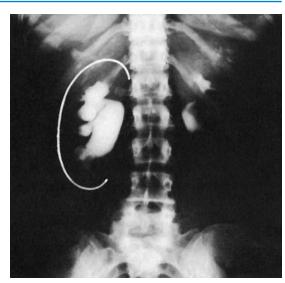
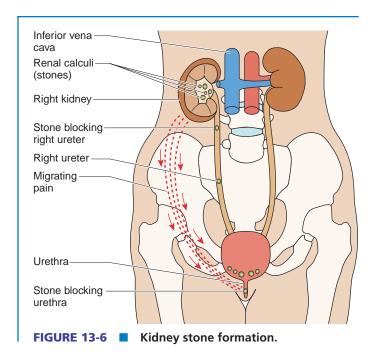


FIGURE 13-5 Hydronephrosis. Collection of contrast media in the kidney displays an extraordinary amount of material, which indicates right-sided hydronephrosis caused by obstruction of the ureter.



TERM	MEANING	
urethritis yū-rē-thrī' tis	inflammation of the urethra	
urethrocystitis yū-rē'thrō-sis-tī'tis	inflammation of the urethra and bladder	
urethral stenosis yū-rē' thrăl ste-nō' sis	narrowed condition of the urethra	
urinary tract infection (UTI) yūr' i-nār-ē trakt in-fek' shun		
uremia yū-rē'mē-ă azotemia az-ō-tē'mē-ă	excess of urea and other nitrogenous waste in the blood caused by kidney failure	

Programmed Review: Diagnostic Terms

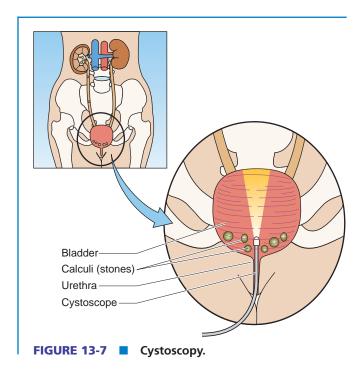
ANSWERS	REVIEW
	13.40 <i>Cyst/o</i> is a combining form meaning either bladder or
sac	<i>Cyst</i> , a root word, describes an abnormal sac. The term
many	polycystic therefore pertains to cysts. This term
	describes the inherited disease of multiple cysts that gradually
	form in the kidney, causing destruction of normal tissue and

ANSWERS	REVIEW
adult polycystic kidney disease	renal failure. Most commonly diagnosed in adulthood, this disease is called (APKD).
-itis nephr/o nephritis glomerulonephritis	13.41 Recall that the suffix meaning inflammation is Many diagnostic terms are formed by adding this suffix to the combining forms for anatomic structures. In addition to the combining form ren/o, another combining form meaning kidney is Using that form, the term for inflammation of the kidney is A form of nephritis involving the glomerulus is called
cyst/o cystitis	13.42 In addition to the combining form <i>vesic/o</i> , another combining form for the bladder is Using that form, the term for inflammation of the bladder is
urethritis	13.43 Inflammation of the urethra is called
urethrocystitis	13.44 Inflammation of both the urethra and the bladder is called
pyel/o renal pelvis pyelonephritis	13.45 Recall that the combining form meaning basin is The basin-like portion of the ureter is called the Therefore, the term for inflammation of the renal pelvis area of the kidney is
condition nephrosis	13.46 Recall that the suffix <i>-osis</i> means an increase or That suffix is used to make the term for degenerative disease of the kidney (specifically, the renal tubules):
condition of hydronephrosis	13.47 A combining form meaning water (or watery fluid) is <i>hydr/o</i> . Recall that the suffix <i>-osis</i> means or increase. The term referring to a condition of urine pooling in the renal pelvis because of an outflow obstruction is
lith/o -iasis nephrolithiasis	13.48 Recall that the combining form for stone is The suffix for formation of or presence of is These word parts, along with the combining form <i>nephr/o</i> , create the term for the presence of stones in the kidney:

ANSWERS	REVIEW
	13.49 A general medical term for the condition of a narrowed
	structure is stenosis. A narrowed condition of the urethra is called
urethral stenosis	·
	13.50 The invasion of pathogenic bacteria into urinary
urinary tract	structures is called a
infection	(UTI).
-emia	13.51 Recall that the suffix for a blood condition is
	Using the combining form for urine (in this case, referring to urea
	and waste products normally excreted in urine), the condition of
	nitrogenous wastes in the blood because of kidney failure is
uremia, azotemia	A synonym for uremia is, a
	term that is made with the prefix <i>azo-</i> , which refers to a nitrogen
	molecule.

Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
cystoscopy (Fig. 13-7) sis-tos' kŏ-pē	examination of the bladder using a rigid or flexible cystoscope



TEST OR PROCEDURE	EXPLANATION
kidney biopsy (Bx)	removal of kidney tissue for pathologic examination
kid'nē bī'op-sē renal biopsy (Bx)	
rē'năl bī'op-sē	

RADIOGRAPHY

intravenous pyelogram (IVP) (see Fig. 13-5) in'tră-vē'nŭs pī'el-ō-gram intravenous urogram (IVU) in' tră-vē' nŭs yūr'ō-gram

kidneys, ureters, bladder (KUB) (Fig. 13-8) kid'nēz, yū-rē'tĕrz, blad'ĕr

x-ray image of the urinary tract obtained after an iodine contrast medium has been injected into the bloodstream; the contrast passes through the kidney and may reveal an obstruction, evidence of trauma, etc.

abdominal x-ray image of the kidneys, ureters, and bladder; typically used as a scout film before obtaining an intravenous pyelogram (IVP)



FIGURE 13-8 KUB radiograph showing kidney stones in ureters and bladder (arrows).

TEST OR PROCEDURE	EXPLANATION
scout film skowt film	plain-film x-ray image obtained to detect any obvious pathology before further imaging (e.g., a KUB before an IVP)
renal angiogram rē' năl an' jē-ō-gram renal arteriogram rē' năl ar-tēr' ē-ō-gram	x-ray image of the renal artery obtained after injecting contrast material into a catheter in the artery
retrograde pyelogram (RP) ret' rō-grād pī' el-ō-gram retrograde urogram ret' rō-grād yūr'ō-gram	x-ray image of the bladder, ureters, and renal pelvis obtained after contrast medium has been injected up to the kidney by way of a small catheter passed through a cystoscope; used to detect the presence of stones, obstruction, etc.
voiding cystourethrogram (VCU or VCUG) voy'ding sis-tō-yū-rēth'rō-gram	x-ray image of the bladder and urethra obtained during urination (<i>voiding</i> = urinating)
abdominal sonogram ab-dom'i-năl son'ō-gram	abdominal ultrasound image of the urinary tract, including the kidney and bladder

LABORATORY TESTING

urinalysis (UA) (Fig. 13-9) yū-ri-nal'i-sis

specific gravity (SpGr)

spĕ-sif'ik grav'i-tē

pН

glucose glū' kōs

albumin (alb) al-byū'min

protein

prō' tēn ketones kē' tōnz

urine occult blood yūr'in ŏ-kŭlt' blŭd

bilirubin bil-i-rū'bin

urobilinogen yūr'ō-bī-lin'ō-jen

nitrite $n\bar{\imath}'tr\bar{\imath}t$

microscopic findings (see Figs. 13-3 and 13-4) mī'krō-skop'ik fīnd'ings

physical, chemical, and microscopic examination of urine

measure of the concentration or dilution of urine

measure of the acidity or alkalinity of urine chemical test used to detect sugar in the urine; most often used to screen for diabetes (glucose = sugar) chemical test used to detect the presence of albumin in the urine

chemical test used to detect the presence of ketone bodies in the urine; positive test indicates that fats are being used by the body instead of carbohydrates, which occurs during starvation or an uncontrolled diabetic state

chemical test for the presence of hidden blood in the urine resulting from red blood cell hemolysis; indicates bleeding in the kidneys (occult = hidden)

chemical test used to detect bilirubin in the urine; seen in gallbladder and liver disease

chemical test used to detect bile pigment in the urine; increased amounts are seen in gallbladder and liver disease chemical test to determine the presence of bacteria in the urine

microscopic identification of abnormal constituents in the urine (e.g., red blood cells, white blood cells, and casts); reported per high- or low-power field (hpf or lpf, respectively)

CENTRAL MEDICAL CENTER

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AGE: 38Y LOC: TEST DOB: 2/2/XX NAME: TEST, PATIENT

SEX: M MR# TEST-221

ACCT#: H1111111111

REC: 11/2/20xx 13:25 M63560 COLL: 11/2/20xx 13:24

URINE BASIC

STRAW Color CLEAR Appearance [1.003 - 1.035] Specific Gravity 1.010 [5.0 - 9.0]рΗ 5.5 NEG [0 - 10]Protein [NEG] NEG Glucose [NEG] NEG Ketones [NEG] Bilirubin NEG

NEG

Urine Occult Blood NEG Nitrites

URINE MICROSCOPIC

3 to 4 /HPF Epithelial Cells WBCs 0 to 1 /HPF /HPF RBCs 0

[NEG]

Bacteria 0 Mucous Threads 0

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PAGE 1 INTERIM REPORT

MG/DL

FIGURE 13-9 Sample urinalysis (UA) report.



Programmed Review: Diagnostic Tests and Procedures

ANSWERS	REVIEW
vesic/o	13.52 Recall that the two combining forms for bladder are <i>cyst/o</i> and The first of these, combined with the suffix for process of examination with an instrument, forms the term
cystoscopy	for examination of the bladder with a special scope:
biopsy renal	13.53 The general term for removal of any body tissue for pathologic examination is (Bx). The removal of kidney tissue is called a kidney biopsy or a biopsy.
recording radiography	13.54 Recall that the suffix <i>-graphy</i> means the process of (e.g., an image). The process of making x-ray studies of internal body structures, such as the urinary tract, is termed
radiography	13.55 A plain-film x-ray image obtained to detect any obvious
scout	pathology before further imaging is called a film. An abdominal x-ray image of the kidneys, ureters, and bladder (called
KUB	a) is often obtained as a scout film before additional images are taken using a contrast medium.

ANSWERS	REVIEW
record	13.56 Recall that the suffix <i>-gram</i> means a The
	combining form <i>pyel/o</i> means basin, referring to the basin-like
renal	portion of the ureter in the kidney known as the
pelvis	These components are used to name a type of x-ray
	image of the urinary tract that is obtained after contrast iodine has
	been injected into the bloodstream to reveal obstruction, trauma,
intravenous	or other problems in the kidney:
pyelogram	(IVP). The other term for this x-ray, using the
urogram	combining form for urine, is intravenous Recall
within	that the prefix <i>intra-</i> means, referring in this case
	to the contrast medium administered within a vein.
	13.57 The term angiogram comes from the combining form
vessel	angi/o, meaning; angiograms are x-ray images of
	blood vessels in many parts of the body. Therefore, the general
	term describing an x-ray image of the renal artery that is obtained
renal	after a contrast medium has been injected into it is
angiogram .	The specific term uses the combining for
arteriogram	artery: renal
	13.58 The type of x-ray image of urinary structures that is
	obtained after a contrast medium is sent up (backward) through a
retrograde pyelogram	catheter is called a (RP).
	The word retrograde refers to the insertion of the medium in a
	direction against the usual flow (of urine in this case).
urinate	13.59 To void means to An x-ray image of the
	bladder and urethra (using the combining forms for both) that is
voiding	obtained during urination is called a
cystourethrogram	(VCU or VCUG).
	13.60 Ultrasound is also used with the urinary tract. An
	ultrasound image of the abdomen showing the kidneys and
abdominal sonogram	bladder is called an
	13.61 Many different laboratory tests are conducted on the
	urine to aid in diagnosing conditions of the urinary system. The
	term for a full set of physical, chemical, and microscopic
urinalysis	examinations of urine is (UA).

ANSWERS	REVIEW
specific gravity	13.62 The measurement of the concentration of urine, showing the kidney's ability to concentrate or dilute urine, is called (SpGr).
рН	13.63 The measurement of the acidity or alkalinity of any fluid is called its Urinalysis (UA) includes the urine pH.
glucose	13.64 Sugar in the blood or urine is called When detected in the urine, glucose may be an indication of diabetes.
albumin/o albumin	13.65 Recall that the combining form meaning protein is The test in urinalysis (UA) that detects the presence of protein in the urine is called an or protein test.
ketones	13.66 The test to detect the presence of ketone bodies in the urine is simply called
breaking down urine occult blood	13.67 Recall that the suffix -lysis means dissolution or Hemolysis occurs when the intact membranes of red blood cells break down. The cells, once intact, are now hidden. The presence of free-flowing hemoglobin (the pigment normally contained within red blood cells) is a clue to their hidden state. The chemical test of urine to determine the presence of these once intact and now hidden blood cells is called
bilirubin	13.68 Bilirubin is a component of bile, which is secreted by the liver and is not normally present in urine. During urinalysis (UA), the chemical test for its presence in urine is simply called
urobilinogen liver	13.69 The chemical test for the presence of a bile pigment in the urine is called Increased amounts of urobilinogen are seen in gallbladder and disease.
bacteriuria	13.70 The presence of bacteria in the urine is termed Nitrite is a waste product that is produced by bacteria. The chemical test to determine the presence of this waste product in urine, thereby indicating bacteriuria, is simply called
nitrite	

ANSWERS	REVIEW
microscopic findings	13.71 Urine is examined under a microscope to identify abnormal constituents, such as blood cells. The results of this examination are called
urine culture sensitivity	13.72 The isolation of a urine specimen in a culture medium to grow microorganisms and to identify drugs to which they are sensitive is called a and and (C&S).
creatinine urine creatinine	13.73 Recall that a waste product of muscle metabolism is The test that determines the level of creatinine in the urine is called
serum creatinine creatinine clearance	13.74 Blood tests (serum tests) also help to diagnose problems in the urinary system. The test to determine the level of creatinine in the blood is called Measurements taken in the blood and in a 24-hour urine specimen are used to determine the rate at which creatinine is cleared by the kidneys; this is called testing.
blood urea nitrogen	13.75 BUN is the abbreviation for, a blood test to determine the level of urea in the blood. The results of this test may indicate a kidney disorder.



Self-Instruction: Operative Terms

TERM	MEANING
urologic endoscopic surgery (Fig. 13-10) yūr-ō-loj'ik en-dō-skop'ik sŭr'jĕr-ē	use of specialized endoscopes (e.g., resectoscope) within the urinary tract to perform various surgical procedures, such as resection of a tumor, repair of an obstruction, stone retrieval, placement of a stent, etc.
resectoscope rē-sek' tŏ-skōp	urologic endoscope inserted through the urethra to resect (cut and remove) lesions of the bladder, urethra, or prostate
intracorporeal lithotripsy (Fig. 13-11) in' tră-kōr-pō' rē-ăl lith'ō- trip-sē	method of destroying stones within the urinary tract using discharges of electrical energy that are transmitted to a probe within a flexible endoscope; most commonly used to pulverize bladder stones

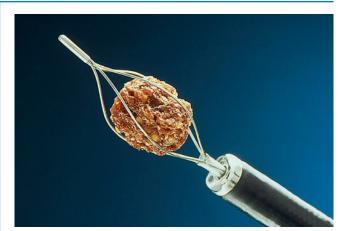
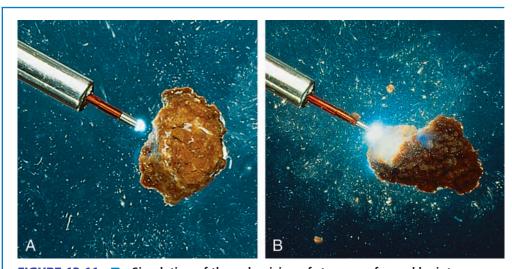
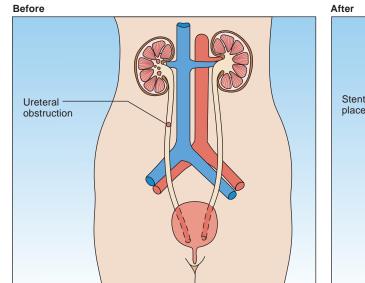


FIGURE 13-10 Stone basket used in kidney stone retrieval.

TERM	MEANING
nephrotomy ne-frot'ŏ-mē	incision into the kidney
nephrorrhaphy nef-rōr'ă-fē	suture of an injured kidney
nephrolithotomy nef'rō-li-thot'ŏ-mē	incision into the kidney for the removal of stones
ne-frek' tŏ-mē	excision of a kidney
pyeloplasty pī'e-lō-plas-tē	surgical reconstruction of the renal pelvis
stent placement (Fig. 13-12) stent plās' ment	use of a device (stent) to hold open vessels or tubes (e.g., an obstructed ureter)



■ Simulation of the pulverizing of stones performed by intracorpo-**FIGURE 13-11** real lithotripsy.



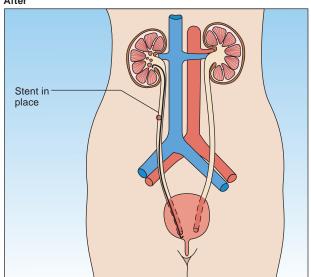


FIGURE 13-12 Placement of a double-J stent to relieve ureteral obstruction (kidney stone).

TERM	MEANING
kidney transplantation kid' nē tranz-plan-tā' shŭn renal transplantation rē' năl tranz-plan-tā' shŭn	transfer of a kidney from the body of one person (donor) to another (recipient)
urinary diversion yūr' i-nār-ē di-vĕr' zhŭn	creation of a temporary or permanent diversion of the urinary tract to provide a new passage through which urine exits the body; used to treat defects or diseases (e.g., bladder cancer)
noncontinent ileal conduit (Fig. 13-13) non-kon'ti-nent il'e-ăl kon'dū-it	removal of a portion of the ileum to use as a conduit to which the ureters are attached at one end; the other end is brought through an opening (stoma) created in the abdomen; urine drains continually into an external appliance (bag);

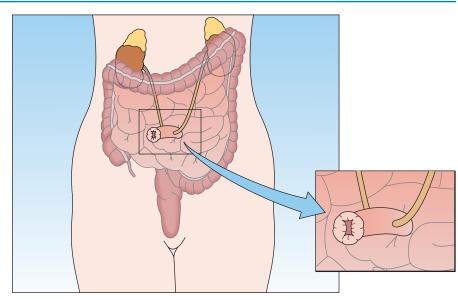


FIGURE 13-13 Urostomy: ileal conduit.

TERM	MEANING
continent urostomy kon' ti-nent yū-ros-tō' mē	noncontinent indicates that urine cannot be held and drains continually an internal reservoir (pouch) constructed from a segment of intestine that diverts urine through an opening (stoma) that is brought through the abdominal wall; a valve is created internally to prevent leakage, and the patient empties the pouch by catheterization; continent refers to the ability to hold or retain urine
orthotopic bladder ōr-thō-top' ik blad'ĕr neobladder nē'ō-blad'ĕr	bladder constructed from portions of intestine connected to the urethra, allowing "natural" voiding

Programmed Review: Operative Terms

ANSWERS	REVIEW
-tomy nephrotomy	13.76 Recall that the suffix meaning incision is The term for an incision into the kidney is therefore
lith/o	The combining form meaning stone is An incision into the kidney to remove a stone (using the combining forms for both
nephrolithotomy	kidney and stone) is therefore
excision or removal nephrectomy	13.77 The suffix <i>-ectomy</i> means Therefore, the excision of a kidney is called
ı J	13.78 The suffix referring to surgical repair or reconstruction is
-plasty	Therefore, the term for surgical reconstruction of the renal pelvis (using the combining form meaning basin, for this
pyeloplasty	basin-like structure) is
-rrhaphy	13.79 Recall that the suffix for suturing is The procedure of suturing an injured kidney is therefore called
nephrorrhaphy	
	13.80 Urologic endoscopic surgery uses a specialized endoscope,
resectoscope	called a, to resect tumors or to perform other surgical procedures within the urinary tract. A device that is
	surgically placed to hold open a vessel or tube is called a
stent	Urologic stent placement also may be performed
resecto	through thescope.

ANSWERS	REVIEW
within intracorporeal lithotripsy intracorporeal lithotripsy	13.81 Stones within the urinary tract may be destroyed by the transmission of electrical energy through an endoscope. The prefix intra- means, and corpor/o combined with the suffix -eal pertains to the body. Thus, this process, performed within the body, is described as being The suffix -tripsy means crushing; thus, the crushing of a stone is termed Together, these two terms form the name for the procedure of electrically destroying stones within the urinary tract, usually in the bladder:
kidney or renal transplantation	13.82 In patients with two diseased kidneys, a kidney from a donor may be surgically implanted in the patient. This procedure is called
bladder ileal conduit continent	13.83 Defects or diseases such as bladder cancer can require the temporary or permanent surgical diversion of the urinary tract. When cystectomy, or removal of the, is required, it is necessary to create a new permanent passage for urine to exit the body. One method that uses a portion of the ileum as a conduit, diverting urine from the ureters to the outside of the body is called an The term continent refers to the ability to hold or retain urine. This method is considered to be non, because urine cannot be held and drains
	continually into a bag.
urostomy continent	13.84 The internal reservoir constructed of intestine that diverts urine to a stoma on the abdomen with a valve attachment to allow catheter draining is called Because the reservoir is capable of retaining urine, the procedure is called urostomy.
neo urination, orthotopic correct pertaining to	13.85 Construction of a new bladder, or abladder, provides a straight connection to the urethra, allowing a more natural voiding or A neobladder is also called anbladder, a term formed from the combination of <i>orth/o</i> , meaning straight, normal, or; <i>top/o</i> , meaning place; and <i>-ic</i> , meaning



Self-Instruction: Therapeutic Terms

TERM	MEANING		
extracorporeal shock wave lithotripsy (ESWL) eks' tră-kōr-pō' rē-ăl shok wāv lith'ō-trip' sē	procedure using ultrasound outside the body to bombard and disintegrate a stone within; most commonly used to treat urinary stones above the bladder		
kidney dialysis kid'nē dī-al'i-sis	methods of filtering impurities from the blood, replacing the function of one or both kidneys lost in renal failure		
hemodialysis hē' mō-dī-al' i-sis	method of removing impurities by pumping the patient's blood through a dialyzer, the specialized filter of the artificial kidney machine (hemodialyzer)		
peritoneal dialysis per'i-tō-nē'ăl dī-al'i-sis	method of removing impurities using the peritoneum as the filter; a catheter inserted in the peritoneal cavity delivers cleansing fluid (dialysate) that is washed in and out in cycles		
urinary catheterization yūr'i-nār-ē kath'ĕ-ter-ī- zā'shun	methods of placing a tube into the bladder to drain or collect urine		
straight catheter strāt kath'ĕ-tĕr	a type of catheter that is inserted through the urethra into the bladder to relieve urinary retention or to collect a sterile specimen of urine for testing; the catheter is removed immediately after the procedure		
Foley catheter fō' lē kath'ĕ-tĕr	indwelling catheter inserted through the urethra and into the bladder that includes a collection system allowing urine to be drained into a bag; the catheter can remain in place for an extended period		
suprapubic catheter sū'pra-pyū-bĭk kath'ĕ-tĕr	indwelling catheter inserted directly in the bladder through an abdominal incision above the pubic bone that includes a collection system that allows urine to be drained into a bag; used in patients requiring long-term catheterization		
COMMON THERAPEUTIC DRUG CLASSIFICATIONS			

analgesic an-ăl-jē' zik	drug that relieves pain
antibiotic an' tē-bī-ot' ik	drug that kills or inhibits the growth of microorganisms
antispasmodic an' tē-spaz-mod' ik	drug that relieves spasm
diuretic dī-yū-ret'ik	drug that increases the secretion of urine



Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
body, outside extracorporeal extracorporeal shock wave lithotripsy	13.86 Recall that the term intracorporeal pertains to within the In contrast, the prefix <i>extra-</i> means Therefore, the term for outside the body is The procedure using the shock waves of ultrasound from outside the body to break up urinary stones is termed (ESWL).
kidney dialysis hemodialysis	13.87 Dialysis is a general medical term that means filtration. This process of filtering impurities from the blood in patients with renal failure is called
peritoneal dialysis	 13.88 Another method for removing impurities uses the patient's peritoneum (an abdominal cavity) for a filtering bath and is called 13.89 A catheter is a tube that is placed in a body cavity or vessel to allow passage of fluid through it. The process is called catheterization. Catheter placement in the bladder to drain or
urinary catheterization	collect urine is therefore called
straight	13.90 The type of catheter that is inserted straight through the urethra and into the bladder to relieve urinary retention or to collect a sterile specimen of urine for testing and that is removed immediately after the procedure is simply called a catheter.
Foley catheter	13.91 An indwelling catheter is one that is left in place. One type is named for its developer, Dr. Frederick Foley, and is inserted through the urethra and into the bladder and includes a collection system that allows urine to be drained into a bag. This type of catheter, called a, can remain in place for an extended period.

ANSWERS	REVIEW
above suprapubic	13.92 Another type of indwelling catheter is used when the patient needs long-term catheterization. It is inserted directly in the bladder through an abdominal incision made above the pubic bone. <i>Supra-</i> , a prefix meaning excessive or, is used in the name of this catheter in reference to its placement above the pubic bone: catheter.
against antispasmodic antibiotic	13.93 Recall that the prefix <i>anti-</i> means or opposed to. Drug classes are commonly named for their actions, such as acting against some thing or process. A drug that acts to prevent or relieve a spasm is called an The same prefix when joined with the combining form for life (<i>bio</i>) denotes a drug class that acts to kill or inhibit microbial life. This drug is called an
without analgesic	13.94 The Greek word algesis means sensation of pain. Recall that the prefix <i>an-</i> means A type of drug that relieves pain is called an
diuretic	13.95 A drug that increases the secretion of urine is called a Other common substances, such as coffee and alcohol, also have diuretic effects.

CHAPTER 13 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
alb	albumin
APKD	adult polycystic kidney disease
BUN	blood urea nitrogen
Bx	biopsy
C&S	culture and sensitivity
ESWL	extracorporeal shock wave lithotripsy
hpf	high-power field
IVP	intravenous pyelogram
IVU	intravenous urogram
KUB	kidneys, ureters, bladder
lpf	low-power field
RP	retrograde pyelogram

ABBREVIATION	EXPANSION
SpGr	specific gravity
SUI	stress urinary incontinence
UA	urinalysis
UTI	urinary tract infection
VCU or VCUG	voiding cystourethrogram

CHAPTER 13 SUMMARY OF TERMS

The terms introduced in chapter 13 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

the definition of each term on a separate piece of	or paper.
abdominal sonogram/637 ab-dom'i-năl son'ō-gram	continent urostomy/645 kon' ti-nent yū-ros-tō' mē
adult polycystic kidney disease (APKD)/632	cortex /625 kōr' teks
ă-dŭlt' pol-ē-sis' tik kid' nē di-zēz' albumin (alb)/637	creatinine /627 krē-at' i-nēn
al-byū'min albuminuria/628	creatinine clearance testing/639 krē-at' i-nēn klēr' ănts test' ing
al-byū-mi-nyū'rē-ă analgesic/647	creatinine, serum/639 krē-at' i-nēn, sēr'ŭm
an-ăl-jē' zik antibiotic/647	creatinine, urine/639 krē-at' i-nēn, yūr' in
an' tē-bī-ot' ik antispasmodic/647	cystitis/632 sis-tī'tis
an' tē-spaz-mod' ik anuria/628	cystoscopy/635 sis-tos' kŏ-pē
an-yū'rē-ă	diuretic/647
azotemia/633 az-ō-tē'mē-ă	dī-yū-ret'ik dysuria /628
bacteriuria/628 bak-tēr-ē-yū'rē-ă	dis-yū'rē-ă enuresis/628
bilirubin/637 bil-i-rū'bin	en-yū-rē'sis extracorporeal shock wave lithotripsy
blood urea nitrogen (BUN)/639 blŭd yū-rē'ă nī'trō-jen	(ESWL)/647 eks' tră-kōr-pō' rē-ăl shok wāv lith'ō-trip' sē
Bowman capsule/626 bō'măn kap'sūl	Foley catheter/647 fō' lē kath' ĕ-tĕr
calices or calyces/625 kal'i-sēz	glomerulonephritis/632 glō-mer'yū-lō-nef-rī'tis

protein/637

prō-tē-nū'rē-ă

proteinuria/628

prō' tēn

kidneys/625

kid'nēz, yū-rē'tĕrz, blad'ĕr

kidneys, ureters, bladder (KUB)/636

kid'nēz

pyelonephritis/632

pī'ĕ-lō-ne-frī'tis

pyeloplasty/643

pī'e-lō-plas-tē

pyuria/629

pī-yū'rē-ă

renal angiogram/637

rē'năl an' jē-ō-gram

renal arteriogram/637

rē'năl ar-tēr'ē-ō-gram

renal biopsy (Bx)/636

rē'năl bī'op-sē

renal pelvis/626

rē'năl pel'vis

renal transplantation/644

rē'năl tranz-plan-tā'shŭn

renal tubule/626

rē'năl tū'byūl

resectoscope/642

rē-sek' tŏ-skōp

retrograde pyelogram (RP)/637

ret'rō-grād pī'el-ō-gram

retrograde urogram/637

ret'rō-grād yūr'ō-gram

scout film/637

skowt film

specific gravity (SpGr)/637

spĕ-sif'ik grav'i-tē

stent placement/643

stent plās' ment

straight catheter/647

strāt kath'ĕ-tĕr

stress urinary incontinence

(SUI)/629

stres yūr'i-nār-ē in-kon'ti-nents

suprapubic catheter/647

sū' pra-pyū-bĭk kath'ĕ-tĕr

urea/627

vū-rē'ă

uremia/633

vū-rē'mē-ă

ureter/626

ū-rē' tĕr

ureteropelvic junction/626

yū-rē' tĕr-ō-pel' vĭk jŭngk' shŭn

urethra/626

yū-rē' thră

urethral meatus /626

yū-rē' thrăl mē-ā' tŭs

urethral stenosis/633

yū-rē' thrăl ste-nō' sis

urethritis/633

vū-rē-thrī' tis

urethrocystitis/633

yū-rē'thrō-sis-tī'tis

urinalysis (UA)/637

yū-ri-nal' i-sis

urinary bladder/626

yūr'i-nār-ē blad'ĕr

urinary catheterization/647

yūr'i-nār-ē kath'ĕ-ter-ī-zā'shun

urinary diversion/644

yūr'i-nār-ē di-vĕr'zhŭn

urinary retention/629

yūr'i-nār-ē rē-ten'shŭn

urinary tract infection

(UTI)/633

yūr'i-nār-ē trakt in-fek'shŭn

urine/627

yūr'in

urine culture and sensitivity

(C&S)/639

yūr'in kŭl'chŭr and sen-si-tiv'i-tē

urine occult blood/637

yūr'in ŏ-kŭlt' blŭd

urobilinogen/637

yūr'ō-bī-lin'ō-jen

urologic endoscopic surgery/642

yūr-ō-loj' ik en-dō-skop' ik sŭr' jĕr-ē

voiding cystourethrogram (VCU or

VCUG)/637

voy'ding sis-tō-y ū-rēth'rō-gram



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

pericystitis

peri / cyst / itis
PRS

DEFINITION: around/bladder or sac/inflammation

			D	LIIIVIII	orv. arour
1.	pyuria				
		/		/	
	DEFINITION:				
2	bacteriosis				
۷,		,			
			S		
	DEFINITION:				
3.	transurethra	.1			
		/		/	
	P		R		S
	DEFINITION:				
4.	urogram				
		/			
	CF		S		
			_		
_	DEFINITION:				
5.	urethrocysti				
		/		/_	
					Ü
	DEFINITION:				
6.	nephroptosi	S			
		/			
	CF				
	DEFINITION:				
7	polyuria				
1.	- •	1		,	
				/	
	1		R		S
	DEFINITION:				

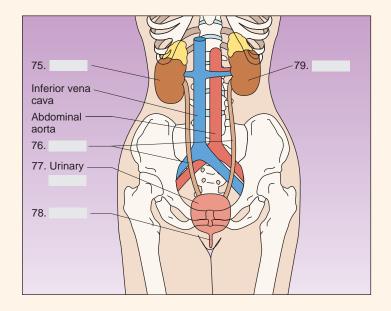
17.	nephrolithias	is	
		<i></i>	/
	CF	R	S
	DEFINITION:		
18.	urostomy		
		<i></i>	
	CF	S	
	DEFINITION:		
19.	albuminuria		
			/
	R	R	S
	DEFINITION:		
20.	ketosis		
	R	_	
	DEFINITION:		
Wri	te the correct	medical terr	for each of the following definitions:
21.			inflammation of the bladder
22.			urinating at night
23.			involuntary discharge of urine
24.			suture of a torn kidney
			degenerative disease of the kidney without inflammation
26.			protein in urine
27.			inherited condition of multiple cysts that gradually form in the kidney in adult life
28.			incision into the kidney
29.			cytologic study of kidney tissue
			physical, chemical, and microscopic study of urine
Con	nplete each m	edical term	writing the missing part or word:
			nation of the bladder
32.	urethral	osis	= a narrowed condition of the urethra
			= procedure for disintegration of stones
34.	urethra, or pi		alized endoscope used to cut and remove lesions from the bladder,
35.	1	ıria = scanty	urination

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36.	uria =	painful or difficult urination			
37.	uria = presence of infection in urine				
38.	uria =	uria = blood in the urine			
39.	uria =	condition without urine formation			
40.	cathe	ter = indwelling catheter inserted into the bladder through an incision			
	above the pubic bone				
41.	coughing or energi	incontinence = involuntary discharge of urine when ng			
		ood = hidden blood			
		obreviation for the following:			
43.	kidney x-ray image	obtained after contrast medium is sent "backward" through a cystoscope			
44	cytologic study of k	kidney tissue			
		and microscopic study of urine			
		matching term in the space provided:			
	sugar	a. cyst/o			
	proteinuria	b. bacteriuria			
	uremia	c. renal Bx			
	ren/o	d. albuminuria			
	vesic/o	e. neobladder			
	diuretic	f. Foley			
	kidney biopsy	g. glyc/o			
	nitrite	h. nephr/o			
	catheter	i. azotemia			
	urinary diversion	j. urobilinogen			
36.	bile pigment	k. urination			
Wri	te out the expanded	d term for each abbreviation:			
57.	C&S				
58.	VCU				
59.	BUN				
	1				
65.	RP				

Circle the combining form that corresponds to the meaning given:

66. urine	hydr/o	ur/o	ren/o
67. thirst	dips/o	crin/o	hidr/o
68. pus	pyel/o	py/o	albumin/o
69. bladder	cyt/o	vesic/o	nephr/o
70. protein	albumin/o	lip/o	bacteri/o
71. kidney	hepat/o	cyst/o	nephr/o
72. opening	or/o	meat/o	orth/o
73. basin	meat/o	vesic/o	pyel/o
74. stone	scler/o	lip/o	lith/o

Identify the parts of the urinary system by writing the missing words in the spaces provided:



75.	
78.	
70	

Circle the correct spelling in each set of words:

80.	cystascope	cystoskope	cystoscope
81.	pyleogram	pyelogram	pielogram
82.	oliguria	oleguria	oligouria
83.	hydronefrosis	hidronephrosis	hydronephrosis
84.	azootemia	azothemia	azotemia
85.	urinalysis	urinelysis	uranalysis
86.	glowmerular	glomerular	glomarular
87.	nefrectomy	nephrecktomy	nephrectomy
88.	diuretic	dyuretic	diuretik
89.	hemadialysis	hemodialysis	hemidialysis

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Give the noun used to form each adjective:

90. urinary	
91. glomerular	
92. meatal	
93. uremic	
94. urethral	
95. nephrotic	



MEDICAL RECORD ANALYSIS

Medical Record 13-1

CHART NOTE

- S: This 70 y.o. female has had polyuria, nocturia, and dysuria \times 2–3 days. She had a similar infection 6 months ago and was treated with Macrobid, 50 mg, q.i.d. \times 3 d. She has occasional stress incontinence with hard sneezing.
- O: The patient is afebrile. UA shows a trace of leukocytes and blood.
- A: R/O recurrent UTI
- P: C&S

Cipro 500 mg tab p.o. b.i.d. pending culture pt instructed to ↑ fluid intake and call for culture results in 48 h

- 1. What is the patient's CC?
 - a. presence of red and white blood cells in her urine
 - b. a urinary tract infection
 - c. pain when she urinates, with the need to go often, even at night
 - d. urinary retention
- 2. What were the objective findings?
 - a. culture showed leukocytes and blood in the urine
 - b. urinalysis indicated red and white blood cells present in urine
 - c. infection of the bladder and urethra
 - d. return of infection of the bladder and urethra
- 3. What was the doctor's impression?
 - a. leukocytes and blood in the patient's urine
 - b. patient has pain when she urinates, with the need to go often, even at night
 - c. patient has a bladder infection
 - d. patient may have another bladder infection

- 4. Which medical terms describe the UA findings?
 - a. pyuria and hematuria
 - b. dysuria and enuresis
 - c. bacteriuria and hematuria
 - d. bacteriuria and nocturia
- 5. To what does C&S refer?
 - a. condition of urinary stress
 - b. isolation of microorganisms in the urine
 - c. inflammation of the bladder
 - d. physical, chemical, and microscopic study of urine
- 6. How should the Cipro be administered?
 - a. two, by mouth every day
 - b. one, by mouth two times a day
 - c. one, by mouth three times a day
 - d. one, by mouth four times a day
- 7. Was the patient's temperature elevated?
 - a. yes
 - b. nc
 - c. nothing is stated about the patient's temperature

Medical Record 13-2 A and B

FOR ADDITIONAL STUDY

Charles Mercier had urination problems and abdominal pain when he saw his doctor, who referred him to Central Medical Center for a possible kidney infection. Dr. Zlatkin performed surgery, and Mr. Mercier was soon doing fine and was discharged. As planned, he later returned for surgical removal of a device that had been temporarily placed during the first surgery. Medical Record 13-2A is the discharge summary from the first surgery, dictated by Dr. Zlatkin. The second document, Medical Record 13-2B, is the operative report for Mr. Mercier's return surgery 6 weeks later, also dictated by Dr. Zlatkin.

Read Medical Record 13-2 (pages 662–663), then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 13-2

1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define the term below.		
	stent (double-J)		
	drain (Jackson-Pratt)		
	lithotomy position		
	ureteral catheter		
	patency		
2.	In your own words, not using medical terminology, briefly describe the history of Mr. Mercier's medical problems identified in the "Discharge Summary":		
	Put the following events reported in the "Discharge Summary" in chronological order by numbering them from 1 to 5:		
	removal of drain		
	reconstruction of renal pelvis		
	difficulty with micturition		
	urine test for microorganisms		
	insertion of stent		
4.	While at home after the operation, Mr. Mercier is instructed to do two things and to not do three things. List them below:		
	Mr. Mercier should		
	Mr. Mercier should not		

5.	When Mr. Mercier returned 6 weeks later for follow-up surgery, describe in your own words the preoperative diagnosis:			
		During the second surgery, an endoscopic procedure and two different x-ray procedures were used to visualize internal structures. List and define each procedure, and describe the findings:		
	Procedure	Definition	Finding	
			ich was then removed in the secerform during the time between	
8.	. In the second surgery, did Mr. the report that supports your a		cations? Copy the sentence from	

Medical Record 13-2A For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

DISCHARGE SUMMARY

DATE OF ADMISSION:

10/25/20xx

DATE OF DISCHARGE: 10/29/20xx

ADMITTING DIAGNOSIS:

Left ureteropelvic junction obstruction.

DISCHARGE DIAGNOSIS:

Left ureteropelvic junction obstruction.

PROCEDURE PERFORMED:

Left dismembered pyeloplasty and placement of stent.

BRIEF SUMMARY:

The patient is a 19-year-old male who was admitted to the hospital a month ago with left pyelonephritis. He was found to have a left ureteropelvic junction obstruction. The patient was brought to the hospital at this time for repair of the moderately to severely obstructed left kidney. A preoperative urine culture was sterile. The patient underwent the procedure without complication. A double-J stent was placed. The Jackson-Pratt drain was removed on the second postoperative day because of minimal drainage. The patient initially had urinary retention, but this resolved by the third postoperative day. He was doing fine at the time of discharge. His condition on discharge is good.

INSTRUCTIONS TO THE PATIENT:

1) Regular diet. 2) No heavy lifting, straining, or driving an automobile for six weeks from the day of surgery. He should also keep the incision relatively dry this week. 3) Follow up in my office in three weeks. 4) It is anticipated the stent will remain indwelling for six weeks and then will be removed cystoscopically at that time. 5) Discharge medication is Tylenol #3, 1-2 q 4 h p.r.n. pain.

L. Zlatkin, M.D.

LZ:mr

10/29/20xx 10/30/20xx

DISCHARGE SUMMARY

PT. NAME:

MERCIER, CHARLES F.

ID NO:

IP-392689

ROOM NO:

444

ATT. PHYS:

L.ZLATKIN, M.D.

Medical Record 13-2B For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

OPERATIVE REPORT

DATE: December 7, 20xx

PREOPERATIVE DIAGNOSIS: Congenital left ureteropelvic junction obstruction status post

pyeloplasty. Indwelling left ureteral stent.

POSTOPERATIVE DIAGNOSIS: Congenital left ureteropelvic junction obstruction

status post pyeloplasty. Indwelling left

ureteral stent, removed

OPERATION: Cystoscopy, removal of left ureteral stent, and left

retrograde pyelogram.

PROCEDURE: The patient was identified, was placed on the

operating table, and was administered a general anesthetic. He was placed in the lithotomy position, and a KUB was obtained. The genitalia were prepped and draped in a sterile fashion. After reviewing the KUB, it was noted at this time that the position of the stent was normal. Cystoscopy was performed with a #22 French cystoscope. The stent was identified coming from the left ureteral orifice, and the end was grasped with forceps and removed through the cystoscope. A #8 French cone-tipped ureteral catheter was then placed in the left ureteral orifice and passed to 10 cm. Then, 20 cm³ of contrast was injected into a left collecting system. A film was exposed, and this showed patency without extravasation at the left ureteropelvic junction. There was some filling of calyces and partial filling of the dilated renal pelvis. A drainage film was subsequently obtained showing complete emptying of the pelvis and partial emptying of the mid and distal ureters. Dilated calyces were noted in the kidney. The patient was allowed to awaken and was returned to the recovery room in satisfactory condition. There were no intraoperative complications. He had no bleeding. The patient did receive 1 gm Ancef one-half hour prior to the onset of the procedure.

LZ:mr

D: 12/07/20xx T: 12/08/20xx

E. Ziaukin, iv

OPERATIVE REPORT

PT. NAME: MERCIER, CHARLES F.

ID NO: OP-912689

ROOM NO: ASC

ATT. PHYS: L.ZLATKIN, M.D.

ANSWERS TO PRACTICE EXERCISES

- 1. py/ur/ia
 - RRS

pus/urine/condition of

- 2. bacteri/osis
 - R S

bacteria/condition or increase

- 3. trans/urethr/al
 - P R

across or through/ urethra/pertaining to

- 4. uro/gram
 - CF S

urine/record

- 5. urethro/cyst/itis
 - CF R

urethra/bladder/ inflammation

- 6. nephro/ptosis
 - CF

kidney/falling or downward displacement

- 7. poly/ur/ia
 - P R S

many/urine/condition of

- 8. glomerulo/scler/osis
 - CF R

glomerulus (small ball)/hard/condition or

- increase
- 9. pyo/nephr/itis
 - R

pus/kidney/inflammation

- 10. urin/al
 - R S

urine/pertaining to

- 11. uretero/vesico/stomy
 - **CF** S CF

ureter/bladder/creation of an opening

- 12. glucos/ur/ia
 - R R S

sugar/urine/condition of

- 13. meato/rrhaphy
 - CF

meatus (opening)/suture

14. pyelo/nephr/osis

CF

renal pelvis (basin)/ kidney/condition or

increase

15. cysto/scopy

CF

bladder/process of examination

16. supra/ren/al

Р R S

above/kidney/pertaining

17. nephro/lith/iasis

CF R

kidney/stone/formation or presence of

18. uro/stomy

CF S

urine/creation of an opening

19. albumin/ur/ia

R S

protein/urine/condition of

20. ket/osis

R

ketone bodies/condition or increase

- 21. cystitis
- 22. nocturia
- 23. enuresis
- 24. nephrorrhaphy
- 25. nephrosis
- 26. albuminuria or proteinuria
- 27. adult polycystic kidney disease (APKD)
- 28. nephrotomy
- 29. renal or kidney biopsy
- 30. urinalysis
- 31. cystoscopy
- 32. urethral stenosis
- 33. extracorporeal shock wave lithotripsy
- 34. resectoscope
- 35. oliguria

- 36. dysuria
- 37. pyuria
- 38. hematuria
- 39. anuria
- 40. suprapubic
- 41. stress urinary incontinence
- 42. occult blood
- 43. RP
- 44. renal Bx or kidney Bx
- 45. UA
- 46. g
- 47. d
- 48. i
- 49. h
- 50. a
- 51. k
- 52. c
- 53. b 54. f
- 55. e
- 56. j
- 57. culture and sensitivity
- 58. voiding cystourethrogram
- 59. blood urea nitrogen
- 60. intravenous urogram
- 61. extracorporeal shock wave lithotripsy
- 62. kidneys, ureters, bladder
- 63. specific gravity
- 64. urinary tract infection
- 65. retrograde pyelogram
- 66. ur/o
- 67. dips/o
- 68. py/o
- 69. vesic/o
- 70. albumin/o
- 71. nephr/o
- 72. meat/o
- 73. pyel/o 74. lith/o
- 75. right kidney
- 76. ureters
- 77. bladder
- 78. urethra
- 79. left kidney 80. cystoscope
- 81. pyelogram

87. nephrectomy 82. oliguria 92. meatus 83. hydronephrosis 88. diuretic 93. uremia 84. azotemia 89. hemodialysis 94. urethra 85. urinalysis 90. urine 95. nephrosis 86. glomerular 91. glomerulus

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 13-1: Chart Note

2. b 3. d 4. a 5. b 6. b 7. b

Medical Record 13-2: For Additional Study

See CD-ROM for answers.





CHAPTER 1

Male Reproductive System

✓ Chapter 14 Checklist	LOCATION
☐ Read Chapter 14: Male Reproductive System and complete all programmed review segments.	pages 667-687
☐ Review the starter set of flash cards and term components related to Chapter 14.	back of book
☐ Complete the Chapter 14 Practice Exercises and Medical Record Analysis 14-1.	pages 691-696
☐ Complete Medical Record Analysis 14-2 For Additional Study.	pages 697-700
☐ Complete the Chapter 14 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 14 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 14 terms.	CD-ROM

MALE REPRODUCTIVE SYSTEM OVERVIEW

The male reproductive organs have two primary functions:

- Producing **sperm**, the male reproductive cells, and introducing them into the female reproductive tract to fertilize the female ovum
- Secreting hormones necessary for the development of secondary sexual characteristics



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
balan/o	glans penis
epididym/o	epididymis
orch/o, orchi/o, orchid/o, test/o	testis or testicle
perine/o	perineum
prostat/o	prostate
sperm/o, spermat/o	sperm (seed)
vas/o	vessel

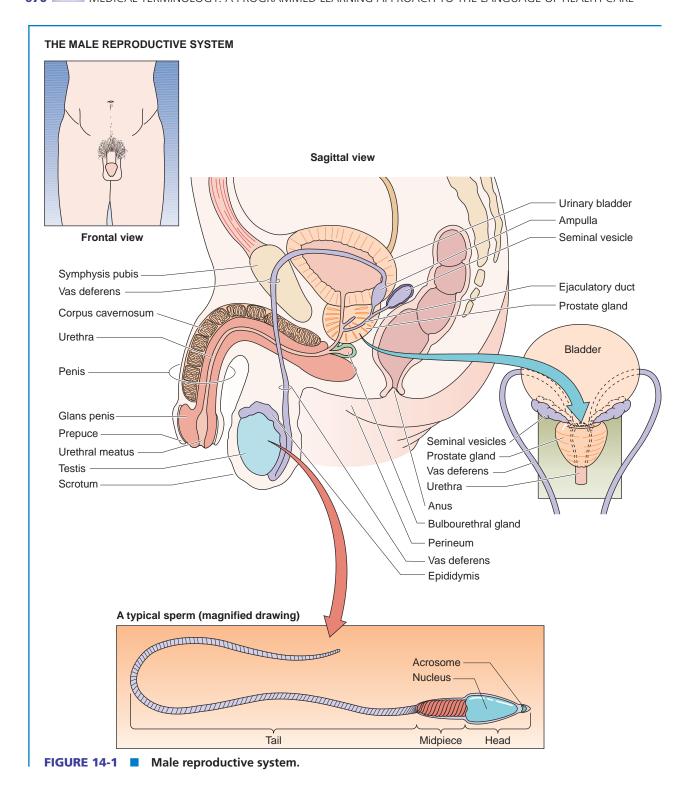
Programmed Review: Combining Forms

ANSWERS	REVIEW
balan/o -plasty balanoplasty	14.1 The combining form meaning glans penis comes from the Greek word balanos, which means acorn. This word was apparently used because the glans has a somewhat acorn shape. That combining form is Recall that the suffix meaning a surgical repair or reconstruction is Thus, the term for surgical reconstruction of the glans penis is
epididym/o epididymides epididymitis	14.2 The Greek word epididymos has an interesting origin: <i>epi</i> -means upon, and <i>didymos</i> means twins (referring to the two testicles). The epididymis is a structure on each testicle. The combining form meaning epididymis is The plural of epididymis is Using the common suffix meaning inflammation with this combining form, the term for inflammation of the epididymis is
orch/o, orchi/o orchid/o orchid/o orchid/o	14.3 Three different combining forms have evolved from the Greek word orchis, meaning testis (testicle):

ANSWERS	REVIEW	
perine/o	14.4 The adjective perineal comes from the combining form, referring to the perineum, an anatomic area between the scrotum and the anus in males.	
prostat/o, pain prostatalgia	14.5 The Latin term prostata has its origins in a Greek word that means one who stands before. Perhaps the prostate gland was so named because it stands before the opening for sperm leaving the body to exit through the penis. The combining form for prostate is Recall that the suffix -algia means Using this combining form, the term for a painful prostate is	
prostataigia	· · · · · · · · · · · · · · · · · · ·	
sperm/o, spermat/o	14.6 The Greek word sperma means seed; thus, sperm are the reproductive "seed" of males. The two combining forms for sperm are and The combining form used to make the term oligospermia, meaning too few sperm in the	
sperm/o	semen, is The combining form used to make the	
spermat/o	adjective form spermatic is	
vas/o -rrhaphy	14.7 The Latin word vas refers to vessel, which includes ducts as well as blood vessels. The combining term for vessel is Recall that the surgical suffix meaning suture is Thus, the procedure of suturing a vessel is called a	
vasorrhaphy	·	

Self-Instruction: Anatomic Terms (Fig. 14-1)

TERM	MEANING
scrotum skrō'tŭm	skin-covered pouch in the groin divided into two sacs, each containing a testis and an epididymis
testis tes'tis testicle tes'tĭ-kĕl	one of the two male reproductive glands, located in the scrotum, that produce sperm and the hormone testosterone
sperm spermatozoon sper'mă-tō-zō'on	male gamete or sex cell produced in the testes that unites with the ovum in the female to produce offspring



TERM MEANING epididymis coiled duct on the top and at the side of the testis that stores ep-i-did'i-mis sperm before emission penis erectile tissue covered with skin that contains the urethra for pē'nis urination and the ducts for secretion of seminal fluid (semen)

TERM	MEANING
glans penis glanz pē'nis	bulging structure at the distal end of the penis (<i>glans</i> = acorn)
prepuce prē'pūs	foreskin; loose casing that covers the glans penis; removed by circumcision
vas deferens vas def'ĕr-ens	duct that carries sperm from the epididymis to the ejaculatory duct (<i>vas</i> = vessel; <i>deferens</i> = carrying away)
seminal vesicle sem'i-năl ves'i-kĕl	one of two sac-like structures behind the bladder and connected to the vas deferens on each side; secretes an alkaline substance into the semen to enable the sperm to live longer
semen sē'mĕn	a mixture of the secretions of the testes, seminal vesicles, prostate, and bulbourethral glands discharged from the male urethra during orgasm (<i>semen</i> = seed)
ejaculatory duct ē-jak'yū-lă-tōr-ē dŭkt	duct formed by the union of the vas deferens with the duct of the seminal vesicle; its fluid is carried into the urethra
prostate gland pros'tāt gland	trilobular gland that encircles the urethra just below the bladder and secretes an alkaline fluid into the semen (<i>pro</i> = before; <i>stat</i> = to stand)
bulbourethral glands bŭl'bō-yū-rē'thrăl glanz Cowper glands kow'per glanz	pair of glands below the prostate, with ducts opening into the urethra, that adds a viscid (sticky) fluid to the semen
perineum per'i-nē'ŭm	external region between the scrotum and anus in a male and between the vulva and anus in a female

TERM TIP Prostrate versus Prostate

Prostate, a Greek word that literally means to stand before, describes the gland encircling the male urethra at the base of the bladder. Its spelling is often confused with **prostrate**, which describes helplessness or exhaustion (*pro* = before; *stratus* = to strew).



Programmed Review: Anatomic Terms

ANSWERS	REVIEW	
scrotum	14.8 The testicles (or testes), which produce sperm and testosterone, are enclosed inside the skin-covered pouch called the	
testis testes	14.9 Sperm are produced by each (testicle). The plural of testis is	

ANSWERS	REVIEW
sperm, spermatozoon	14.10 Produced by the testes, the male gamete (sex cell) is called or
epididymis epididymides	14.11 On each testis is a coiled duct that stores the sperm before emission and is called an The plural of epididymis is
vas deferens vessel	14.12 The duct that carries the sperm from the epididymis to the ejaculatory duct is called the Recall that the combining form <i>vas/o</i> means (or duct). Deferens means carrying away.
ejaculatory duct	14.13 From the epididymis, the sperm is carried by the vas deferens to the
semen	14.14 Various secretions are mixed with the sperm to make the fluid called, which is discharged through the male urethra during orgasm. The semen is sometimes called the male seed.
seminal	14.15 Connected to the vas deferens on each side is another structure that secretes an alkaline substance into the semen. This is called the vesicle. This alkaline substance enables the sperm to live longer.
prostate	14.16 The trilobular gland encircling the urethra below the bladder, which also secretes an alkaline substance into the semen, is called the gland. Malignancies of this gland, called prostate cancer, are common in men.
bulbourethral Cowper	14.17 Finally, a pair of glands below the prostate, with ducts opening into the urethra, secrete a viscous fluid into the semen. These are called the glands, or the glands.
penis glans	14.18 The semen containing sperm and various secretions exits the body through the urethra, which passes through the skin-covered erectile tissue in the male called the The acorn-shaped end of the penis where semen is ejaculated from the urethra is called the penis. The medical term

ANSWERS	REVIEW
prepuce	for foreskin, which covers the glans penis and is removed by circumcision in some men, is the
perineum	14.19 Between the scrotum and the anus is the external area called the



Self-Instruction: Symptomatic Terms

Study the following:

TERM	MEANING
aspermia ā-spĕr'mē-ă	inability to secrete or ejaculate sperm
azoospermia ā-zō-ō-spĕr'mē-ă	semen without living spermatozoa; a sign of infertility in a male (<i>zoo</i> = life)
oligospermia ol'i-gō-spĕr'mē-ă	scanty production and expulsion of sperm
mucopurulent discharge myū-kō-pū'rū-lent dis'charj	drainage of mucus and pus

Programmed Review: Symptomatic Terms

ANSWERS	REVIEW
without	14.20 Recall that the prefix <i>a</i> - means, and that
condition of	the suffix -ia means Use the shorter
	combining form for sperm to create the term for the condition in
	which one is unable to produce or ejaculate sperm (without sperm):
aspermia	
	14.21 <i>Zoo</i> is a term component meaning life. Join this term
sperm or seed	component with <i>sperm/o</i> (a combining form meaning)
	and then modify it with the prefix meaning without and $-ia$ (a suffix
condition of	meaning to create the term for a condition
azoospermia	of semen without living sperm:
few or deficient	14.22 Recall that the prefix <i>oligo-</i> means The
	condition of deficient production and expulsion of sperm is called
oligospermia	

ANSWERS	REVIEW
	14.23 The term purulent refers to pus. The combining form for
	mucus is <i>muc/o</i> . The drainage of mucus and pus is called a
mucopurulent	discharge.



Self-Instruction: Diagnostic Terms

TERM	MEANING
anorchism an-ōr'kizm	absence of one or both testes
balanitis bal-ă-nī'tis	inflammation of the glans penis
cryptorchism (Fig. 14-2) krip-tōr'kizm cryptorchidism krip-tōr'ki-dizm	undescended testicle, or failure of a testis to descend into the scrotal sac during fetal development; the testis most often remains lodged in the abdomen or inguinal canal, requiring surgical repair (<i>crypt</i> = to hide)
epididymitis ep'i-did-i-mī'tis	inflammation of the epididymis
erectile dysfunction (ED) ē'rek-tīl dis-fŭnk'shŭn	failure to initiate or maintain an erection until ejaculation because of physical or psychologic dysfunction; formerly termed impotence (<i>im</i> = not; <i>potis</i> = able)

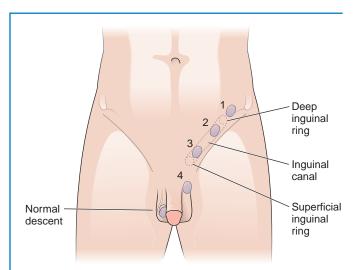


FIGURE 14-2 Cryptorchism (cryptorchidism). Four degrees of incomplete descent of the testis. 1. In the abdominal cavity close to the deep inguinal ring. 2. In the inguinal canal. 3. At the superficial inguinal ring. 4. In the upper part of the scrotum.

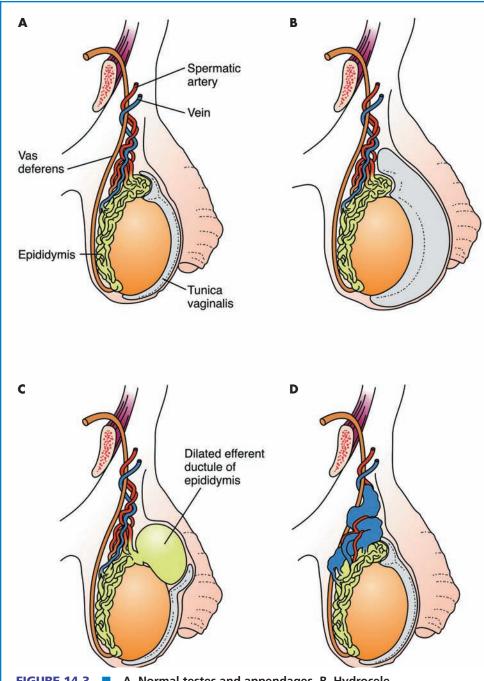
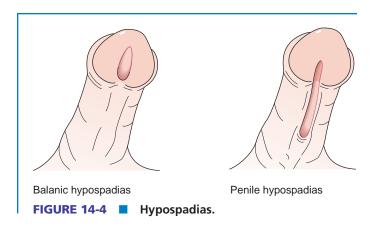


FIGURE 14-3 A. Normal testes and appendages. B. Hydrocele. C. Spermatocele. D. Varicocele.

TERM	MEANING
hydrocele (Fig. 14-3, B) <i>hī'drō-sēl</i>	hernia of fluid in the testis or in the tubes leading from the testis
hypospadias (Fig. 14-4) <i>hī'pō-spā'dē-ăs</i>	congenital opening of the male urethra on the undersurface of the penis (<i>spadias</i> = to draw away)
Peyronie disease (Fig. 14-5) pā-rō-nē' di-zēz'	disorder characterized by a buildup of hardened fibrous tissue in the corpus cavernosum, causing pain and a defective curvature of the penis, especially during erection



TERM	MEANING
phimosis (Fig. 14-6) fī-mō'sis	a narrowed condition of the prepuce (foreskin) resulting in its inability to be drawn over the glans penis, often leading to infection; commonly requires circumcision (<i>phimo</i> = muzzle)
benign prostatic hyperplasia (BPH) (Fig. 14-7) bē-nīn' pros-tat'ik hī-pĕr- plā'zhē-ă benign prostatic hypertrophy (BPH) bē-nīn' pros-tat'ik hī-pĕr'trō-fē	enlargement of the prostate gland, common in older men, causing urinary obstruction
prostate cancer pros'tāt kan'sĕr	malignancy of the prostate gland
prostatitis pros-tă-tī'tis	inflammation of the prostate
spermatocele (Fig. 14-3, C) spër'mă-tō-sēl	painless, benign cystic mass containing sperm lying above and posterior to, but separate from, the testicle
testicular cancer tes-tik'yū-lăr kan'sĕr	malignant tumor in one or both testicles commonly developing from the germ cells that produce sperm; classified in two groups according to growth potential

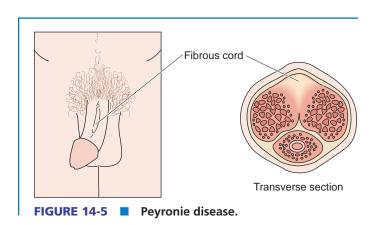




FIGURE 14-6 Phimosis.

TERM	MEANING
seminoma sem-i-nō'mă	most common type of testicular tumor, composed of immature germ cells; highly treatable with early detection
nonseminoma non-sem-i-nō'mă	testicular tumor arising from more mature germ cells; these tumors have a tendency to be more aggressive than seminomas and often develop earlier in life; includes choriocarcinoma, embryonal carcinoma, teratoma, and yolk sac tumors
varicocele (see Fig. 14-3, D) var'i-kō-sēl	enlarged, swollen, herniated veins near the testis (<i>varico</i> = twisted vein)

SEXUALLY TRANSMITTED DISEASE (STD)

Major Bacterial STDs

chlamydia kla-mid'ē-ă

most common sexually transmitted bacterial infection in North America; often occurs with no symptoms and is treated only after it has spread

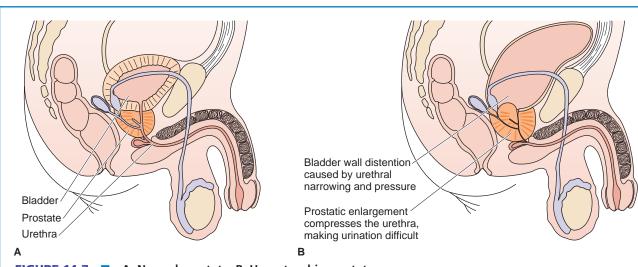


FIGURE 14-7 A. Normal prostate. B. Hypertrophic prostate.



FIGURE 14-8 Syphilitic chancre.

TERM	MEANING	
gonorrhea gon-ō-rē'ă	contagious inflammation of the genital mucous membranes caused by invasion of the gonococcus <i>Neisseria gonorrhea;</i> the condition was named for the urethral discharge characteristic of the infection, which was first thought to be a leakage of semen (<i>gono</i> = seed; <i>rrhea</i> = discharge); the genus is named for the Polish dermatologist Albert Neisser	
syphilis (Fig. 14-8) sif'i-lis	sexually transmitted infection caused by a spirochete and which may involve any organ or tissue over time; usually manifests first on the skin, with the appearance of small, painless, red papules that erode and form bloodless ulcers called chancres	
Major Viral STDs		
hepatitis B virus (HBV) hep-ă-tī'tis B vī'rŭs	virus that causes inflammation of the liver; transmitted through any body fluid, including vaginal secretions, semen, and blood	
herpes simplex virus type 2 (HSV-2) (see Fig. 15-8) her'pēz sim'pleks vī'rŭs tīp 2	virus that causes ulcer-like lesions of the genital and anorectal skin and mucosa; after initial infection, the virus lies dormant in the nerve cell root and may recur at times of stress	
human immunodeficiency virus (HIV) hyū'măn im'yū-nō-dē-fish'en- sē vī'rŭs	virus that causes acquired immunodeficiency syndrome (AIDS), which permits various opportunistic infections, malignancies, and neurologic diseases; contracted through exposure to contaminated blood or body fluid (e.g., semen or vaginal secretions)	
human papilloma virus (HPV) (see Fig. 15-9) hyū'măn pap-i-lō'mă vī'rŭs	virus transmitted by direct sexual contact that causes an infection that can occur on the skin or mucous membranes of the genitals	
condyloma acuminatum (pl. condylomata acuminata) kon-di-lō'mă ă-kū-mi-nā'tŭm (kon-di-lō-mah'tă ă-kū- mĭ-nā'tă)	lesion that appears as a result of human papilloma virus; on the skin, lesions appear as cauliflower-like warts, and on mucous membranes, they have a flat appearance; also known as venereal or genital warts	

Programmed Review: Diagnostic Terms

ANSWERS	REVIEW
-itis balan/o balanitis	14.24 Recall that the suffix meaning inflammation is The combining form for glans penis is Inflammation of the glans penis is therefore called
epididymitis	14.25 Inflammation of the epididymis is called
prostatitis	14.26 Inflammation of the prostate gland is called
condition of, without testis anorchism	14.27 Recall that the suffix <i>-ism</i> means The prefix <i>an-</i> means The combining form <i>orch/o</i> means The medical term for the condition in which one or both testes are absent is
condition of cryptorchidism	14.28 The combining form <i>crypt/o</i> means hidden. Again, the suffix <i>-ism</i> means The condition in which a testicle does not descend during development but remains "hidden" in the abdomen is called
hernia hydrocele varicocele sperm spermatocele	14.29 Recall that the suffix <i>-cele</i> means pouching or The combining form <i>hydr/o</i> refers to water or fluid. A hernia of fluid in the testis or tubes leading from the testis is called a The combining form <i>varic/o</i> means swollen, twisted vein. A condition of swollen, herniated veins near the testis is therefore called <i>Spermat/o</i> , a combining from meaning, is used in the term describing a painless, benign cystic mass containing sperm and lying near the testicle:
hypospadias	14.30 The congenital condition in which the urethra opens on the undersurface of the penis is called

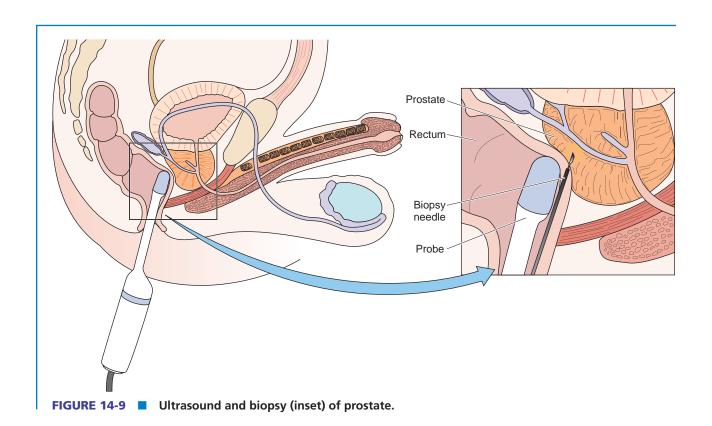
ANSWERS	REVIEW
gonorrhea	Neisser, was coined in ancient times based on the thought that the urethral discharge characteristic of the infection was a leakage of semen: <i>Neisseria</i>
syphilis	14.39 The bacterial STD caused by a spirochete that can, over time, involve any body tissue or organ is
hepatitis B	14.40 Several viruses also cause STDs. The virus that causes inflammation of the liver, which can be spread through any body fluid, is virus (HBV).
herpes simplex virus	14.41 HSV-2 is the abbreviation for this sexually transmitted virus, which typically lies dormant after the initial infection but recurs at times of stress: type 2.
human immunodeficiency virus	14.42 The virus that causes acquired immunodeficiency syndrome (AIDS) is (HIV).
papilloma condylomata acuminata	14.43 HPV is the abbreviation for human virus, which causes an STD characterized by lesions on the skin or mucous membranes. A condyloma is a warty growth; the plural of this term is Condylomata are warty growths in the genital area caused by HPV.



Self-Instruction: Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
biopsy (Bx) bī'op-sē	tissue sampling used to identify neoplasia
biopsy of the prostate bī'op-sē of the pros'tāt	needle biopsy of the prostate; often performed using ultrasound guidance (see Fig. 14-9)
testicular biopsy tes-tik'yū-lăr bī'op-sē	biopsy of a testicle

TEST OR PROCEDURE	EXPLANATION
digital rectal exam (DRE) dij'i-tăl rek'tăl ek-zam'	insertion of a finger into the male rectum to palpate the rectum and prostate
prostate-specific antigen (PSA) test pros'tāt-spĕ-sif'ik an'ti-jen test	blood test used to screen for prostate cancer; an elevated level of the antigen indicates the possible presence of tumor
urethrogram yū-rē'thrō-gram	x-ray of the urethra and prostate
semen analysis sē'mĕn ă-nal'i-sis	study of semen, including a sperm count with observation of morphology (form) and motility; usually performed to rule out male infertility
endorectal sonogram of the prostate (Fig. 14-9) en'dō-rek'tăl son'ō-gram of the pros'tāt transrectal sonogram of the prostate tranz-rek'tăl son'ō-gram of the pros'tāt	scan of the prostate made after introducing an ultrasonic transducer into the rectum; also used to guide needle biopsy





Programmed Review: Diagnostic Tests and Procedures

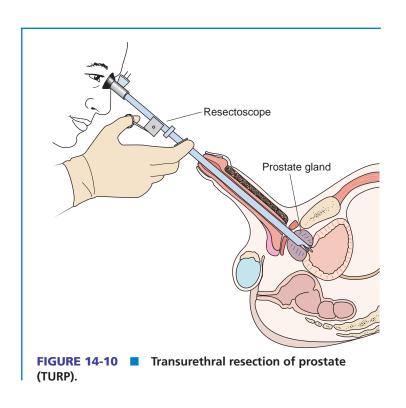
ANSWERS	REVIEW
biopsy testicular	14.44 The general term for removal of any body tissue for pathologic examination is, which is abbreviated Bx. The removal of testicular tissue is called a biopsy.
prostate	14.45 A needle biopsy of the prostate, often performed with ultrasound guidance, is called a biopsy. This may be performed if prostate cancer is suspected.
prostate specific antigen	14.46 Prostate cancer often causes the blood level of a specific antigen to become elevated. Thus, the (PSA) test may indicate the possible presence of a prostate tumor.
digital rectal	14.47 The physical examination procedure involving the physician inserting a finger (digit) into the rectum to palpate the rectum and prostate is called a exam (DRE). An enlarged or tender prostate can be detected with this exam.
within endorectal sonogram	14.48 Recall that the prefix <i>endo-</i> means Another type of examination of the prostate involves introducing an ultrasonic transducer within the rectum to produce an (or transrectal) of the prostate, which can also be used to guide a needle biopsy.
record urethrogram	14.49 Recall that the suffix <i>-gram</i> means a An x-ray record of the urethra and prostate is called a
semen analysis	14.50 A study of semen that includes a sperm count and observations of other characteristics of sperm is called a This analysis is often performed to help determine a man's fertility.



Self-Instruction: Operative Terms

TERM	MEANING
circumcision ser-kŭm-sizh'ŭn	removal of the foreskin (prepuce), exposing the glans penis

TERM	MEANING	
epididymectomy ep'i-did-i-mek'tŏ-mē	removal of an epididymis removal of a testicle	
orchiectomy ōr-kē-ek'tŏ-mē orchidectomy ōr-ki-dek'tŏ-mē		
orchioplasty ōr'kē-ō-plas-tē	repair of a testicle	
orchiopexy ōr'kē-ō-pek'sē	fixation of an undescended testis in the scrotum excision of the prostate gland removal of prostatic gland tissue through the urethra using a resectoscope, a specialized urologic endoscope; common treatment for benign prostatic hyperplasia/hypertrophy (BPH)	
prostatectomy pros-tă-tek'tŏ-mē		
transurethral resection of the prostate (TURP) (Fig. 14-10) tranz-yū-rē'thral rē-sek'shŭn of the pros'tāt		
vasectomy (Fig. 14-11) va-sek'tŏ-mē	removal of a segment of the vas deferens to produce sterility in the male	
vasovasostomy vā'sō-vă-sos'tŏ-mē	restoration of the function of the vas deferens to regain fertility after a vasectomy	



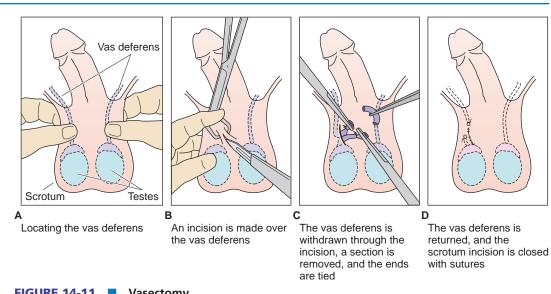


FIGURE 14-11 Vasectomy.

Programmed Review: Operative Terms

ANSWERS	REVIEW				
excision	14.51 Recall that the operative suffix <i>-ectomy</i> means				
	or removal. The excision of an epididymis is termed an				
epididymectomy					
orchiectomy	14.52 The excision of a testicle is called an				
orchidectomy	or				
	14.53 The surgical removal of the prostate gland is called a				
prostatectomy					
	14.54 Excision of part of the vas deferens is called a				
vasectomy	This is done to produce male sterility.				
	14.55 In contrast, the operative suffix <i>-stomy</i> means to create an				
opening	The operation performed to restore the function				
	of the vas deferens after a vasectomy (to restore fertility) is called a				
vasovasostomy	. The combining form vas/o is used twice				
	in the term to refer to both free ends of the vas deferens (which had been cut during the vasectomy), as both ends must be reopened so				
	that they can be reattached.				
	14.56 Recall that the suffix <i>-plasty</i> means surgical reconstruction				
repair	or The surgical repair of a testicle is called				
orchioplasty					

ANSWERS	REVIEW				
	14.57 The suffix for surgical fixation or suspension is				
-pexy	The fixation of an undescended testis in the scrotum				
orchiopexy	is called an				
	14.58 The Latin word root for <i>-cision</i> (e.g., incision) means to cut.				
around	Recall that the prefix <i>circum</i> - means The surgical				
	procedure that cuts the foreskin from around the penis is called a				
circumcision	The medical term for the foreskin is				
prepuce	·				
	14.59 Resect is synonymous with excise. A specialized endoscope				
	allows resection using an instrument through the scope; this is				
	called a resectoscope. Recall that the prefix trans- means across or				
through	The surgical procedure of removing prostatic				
	gland tissue using a resectoscope through the urethra is called a				
transurethral resection	of the prostate (TURP).				



Self-Instruction: Therapeutic Terms

TERM	MEANING		
chemotherapy kem'ō-thār-ă-pē	treatment of malignancies, infections, and other diseases with chemical agents that destroy selected cells or impair their ability to reproduce		
radiation therapy rā'dē-ā'shŭn thār'ă-pē	treatment of neoplastic disease using radiation, usually from a cobalt source, to stop the proliferation of malignant cells		
brachytherapy brak-ē-thār'ă-pē	radiation therapy technique involving internal implantation or radioactive isotopes, such as radioactive seeds to treat prostation cancer; <i>brachy-</i> , meaning short distance, refers to localized application		
hormone replacement therapy (HRT) hōr'mōn rē-plās'ment thār'ă-pē	use of a hormone to remedy a deficiency or regulate production (e.g., testosterone)		
penile prosthesis pē'nīl pros'thē-sis	implantation of a device designed to provide an erection of the penis; used to treat physical impotence		
penile self-injection pē'nīl self-in-jek'shŭn	intracavernosal injection therapy causing an erection; used in treatment of erectile dysfunction		

Programmed Review: Therapeutic Terms

ANSWERS	REVIEW
chemotherapy	14.60 The combining form referring to chemical agents is <i>chem/o</i> . The treatment of malignancies, infections, and other diseases with chemical agents that destroy targeted cells is called
radiation therapy brachytherapy	14.61 Some kinds of cancer are also treated with radiation, which deters the proliferation of malignant cells. This is called Brachy-, a term component meaning short distance, is used to name the technique involving internal implantation of radioactive isotopes, such as radioactive seeds to treat prostate cancer. Signaling its localized application, this therapy is called
hormone replacement	14.62 If a patient is deficient in the production of a hormone, such as testosterone, treatment may involve administering a replacement hormone. This is called therapy (HRT).
penile prosthesis	14.63 A prosthesis is an artificial substitute for a nonfunctioning or missing body part or organ. A device that is implanted in the penis to provide an erection because the penis cannot become erect naturally is called a
penile	14.64 Another therapy to treat erectile dysfunction involves self-injection of a medication into the corpus cavernosum to cause an erection. This therapy is called self-injection.

CHAPTER 14 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION		
ВРН	benign prostatic hyperplasia; benign prostatic hypertrophy		
Bx	biopsy		
DRE	digital rectal exam		
ED	erectile dysfunction		
HBV	hepatitis B virus		
HIV	human immunodeficiency virus		
HPV	human papilloma virus		

ABBREVIATION	EXPANSION
HRT	hormone replacement therapy
HSV-2	herpes simplex virus type 2
PSA	prostate-specific antigen
STD	sexually transmitted disease
TURP	transurethral resection of the prostate

CHAPTER 14 SUMMARY OF TERMS

The terms introduced in chapter 14 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

anorchism/674	condyloma acuminatum/678		
an-ōr'kizm	kon-di-lō'mă ă-kū-mi-nā'tŭm		
aspermia/673	condylomata acuminata/678		
ā-spĕr'mē-ă	kon-di-lō-mah' tă ă-kū'mĭ-nā'tă		
azoospermia/673	Cowper glands/671		
ā-zō-ō-spĕr'mē-ă	kow'per glanz		
balanitis/674	cryptorchism /674		
bal-ă-nī'tis	krip-tōr'kizm		
benign prostatic hyperplasia	cryptorchidism /674		
(BPH)/676	krip-tōr'ki-dizm		
bē-nīn' pros-tat'ik hī-pĕr-plā'zhē-ă	digital rectal exam (DRE)/682		
benign prostatic hypertrophy	dij'i-tăl rek'tăl ek-zam'		
(BPH)/676	ejaculatory duct/670		
bē-nīn' pros-tat'ik hī-pĕr'trō-fē	ē-jak'yū-lă-tōr-ē dŭkt		
biopsy (Bx) /681 <i>bī'op-sē</i>	endorectal sonogram of the prostate/682		
biopsy of the prostate/681	en ⁷ dō-rek'tăl son'ō-gram of the		
bī'op-sē of the pros'tāt	pros'tāt		
brachytherapy/686	epididymectomy/684		
brak-ē-thār'ă-pē	ep'i-did-i-mek'tŏ-mē		
bulbourethral glands/671	epididymis/670		
bŭl'bō-yū-rē'thrăl glanz	ep-i-did'i-mis		
chemotherapy/686	epididymitis/674		
kem'ō-thār-ă-pē	ep'i-did-i-mī'tis		
chlamydia/677	erectile dysfunction (ED)/674		
kla-mid'ē-ă	ē'rek-tīl dis-fŭnk'shŭn		
circumcision/683	glans penis/671		
ser-kйm-sizh'йn	glanz pē'nis		

gonorrhea/678

gon-ō-rē'ă

hepatitis B virus (HBV)/678

hep-ă-tī'tis B vī'rŭs

herpes simplex virus type 2

(HSV-2)/678

her'pēz sim'pleks vī'rŭs tīp 2

hormone replacement therapy **(HRT)**/686

hōr'mōn rē-plās'ment thār'ă-pē

human immunodeficiency virus (HIV)/678

hyū'măn im'yū-nō-dē-fish'en-sē vī'rūs

human papilloma virus (HPV)/678

hyū'măn pap-i-lō'mă vī'rŭs

hydrocele/675

hī' drō-sēl

hypospadias/675

hī' pō-spā'dē-ăs

mucopurulent discharge/673

myū-kō-pū'rū-lent dis'charj

nonseminoma/677

non-sem-i-nō'mă

oligospermia/673

ol'i-gō-spĕr'mē-ă

orchidectomy/684

ōr-ki-dek'tŏ-mē

orchiectomy/684

ōr-kē-ek'tŏ-mē

orchiopexy/684

ōr'kē-ō-pek'sē

orchioplasty/684

ōr'kē-ō-plas-tē

penile prosthesis/686

pē'nīl pros'thē-sis

penile self-injection/686

pē'nīl self-in-jek'shŭn

penis/670

pē'nis

perineum/671

per'i-nē'ŭm

Peyronie disease/675

pā-rō-nē' di-zēz'

phimosis/676

fī-mō'sis

prepuce/671

prē' pūs

prostate cancer/676

pros'tāt kan'sĕr

prostate gland/671

pros'tāt gland

prostatectomy/684

pros-tă-tek'tŏ-mē

prostate-specific antigen (PSA)

test/682

pros'tāt-spĕ-sif'ik an'ti-jen test

prostatitis/676

pros-tă-tī'tis

radiation therapy/686

rā'dē-ā' shŭn thār-ă-pē

scrotum/669

skrō'tŭm

semen/671

sē'mĕn

semen analysis/682

sē'mĕn ă-nal'i-sis

seminal vesicle/671

sem'i-năl ves'i-kĕl

seminoma/677

sem-i-nō'mă

sperm/669

spěrm

spermatocele/676

spĕr'mă-tō-sēl

spermatozoon/669

spěr'mă-tō-zō'on

syphilis/678

sif'i-lis

testicle/669

tes'tĭ-kĕl

testicular biopsy/681

tes-tik'yū-lăr bī'op-sē

testicular cancer/676

tes-tik'yū-lăr kan'sĕr

testis/669

tes' tis

transrectal sonogram of the prostate/682

tranz-rek' tăl son'ō-gram of the pros' tāt

transurethral resection of the prostate (TURP)/684

tranz-yū-rē' thral rē-sek'shŭn of the pros' tāt

urethrogram/682

yū-rē'thrō-gram

varicocele/677

var'i-kō-sēl

vas deferens/671

vas def'ĕr-enz

vasectomy/684

va-sek' tŏ-mē

vasovasostomy/684

vā'sō-vă-sos'tŏ-mē



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

synorchism

 $\frac{syn / orch / ism}{P R}$

DEFINITION: together/testis or testicle/condition of

			U
1.	oligospermia	a	
		/	/
		R	
2	perineoplast		
۷.		-	
		./	_
		S	
3.	testalgia		
		/	_
	R	S	
	DEFINITION:		
4.	balanic		
		/	
	R		_
5	prostatomeg		
0.			
		S	-
6.	orchidectom	•	
		./	_
	R	S	
	DEFINITION:		
7.	anorchism		
		/	/
		R	S
	DEFINITION:		

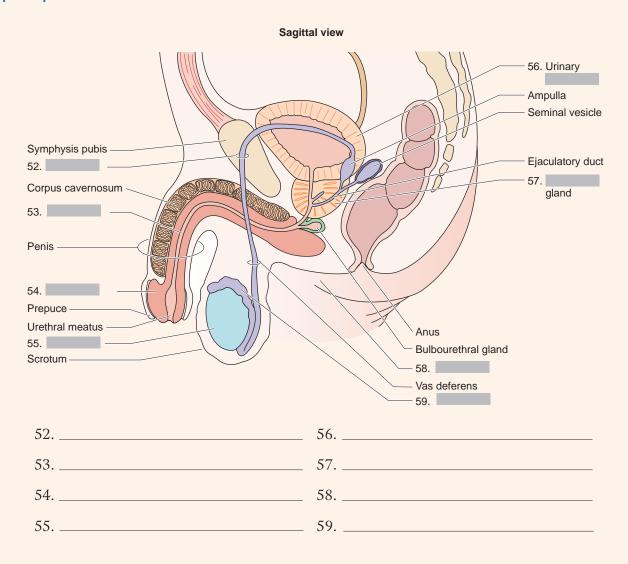
692	MEDICAL TE	RMINOLOGY: A	A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE
8.	vasectomy/_		
	R	S	
9.	aspermia/_		<i></i>
	P	R	S
10.	prostatorrhea/_		
	CF	S	
11.	balanitis		
	R	S	
12.	orchioplasty/_		
	CF	S	
13.	spermatocele		
	CF	S	
14.	epididymotomy		
	CF	S	
15.	vasovasostomy		/
	CF	CF	
Wri	te the correct m	edical term	for each of the following definitions:
			absence of a testicle
			inflammation of the glans penis
			failure to maintain an erection
19.			enlarged, herniated veins near the testicle
20			most common type of testicular cancer tumor

45. Bx

Circle the combining form that corresponds to the meaning given:

46. testis	prostat/o	epididym/o	orchi/o
47. perineum	peritone/o	perine/o	prostat/o
48. sperm	test/o	orchi/o	spermat/o
49. vessel	aden/o	angin/o	vas/o
50. glans penis	prostat/o	orchid/o	balan/o
51. epididymis	sperm/o	vas/o	epididym/o

Identify the parts of the male reproductive anatomy by writing the missing words in the spaces provided:



Circle the correct spelling in each set of words:

60.	fimosis	phemosis	phimosis
61.	oligspermia	oligospermia	oligispermia
62.	azospermia	asospermia	azoospermia
63.	anorchesm	anorchism	anorschizm
64.	balanitis	balanitus	balantis
65.	creptorchism	criptorchism	cryptorchism
66.	hypospadias	hypospadeas	hypespadias
67.	clamidyia	chlamidya	chlamydia
68.	syphilis	syphillis	syphyllis

Give the noun used to form each adjective:

69.	prostatic	
70.	epididymal	
	perineal	
72.	penile	
73.	gonorrheal	



MEDICAL RECORD ANALYSIS

Medical Record 14-1

CHART NOTE

S: Twelve days ago, this 34 y.o. male had a flu-like syndrome that lasted about 2 to 3 hours. For the past two days, he has felt lousy again and is experiencing left testicular pain and swelling s voiding Sx

Allergies: none

PH: negative

Habits: smoking—no alcohol—occasional beer

ROS: otherwise negative

O: Slightly small testes bilaterally; tender (L) epididymis; normal circumcised penis **UA: WNL**

A: (L) epididymitis

P: Rx: Maxaquin 400 mg #16

Sig: $\dot{\pi}$ STAT, then $\dot{\tau}$ daily \times 14 d; return in two weeks for follow-up

QUESTIONS ABOUT MEDICAL RECORD 14-1

- 1. What was the patient's diagnosis?
 - a. testicular pain and swelling
 - b. inflammation of the testicle
 - c. swollen veins near the testis
 - d. inflammation of the coiled duct that stores sperm
 - e. fluid hernia in a testicle
- 2. What was the condition of the patient's penis?
 - a. small but normal
 - b. prepuce had been excised
 - c. inflamed
 - d. swollen and tender
 - e. not stated
- 3. What was the Sig: on the prescription?
 - a. two every day for 14 days
 - b. two immediately, then one a day for 14
 - c. one immediately, then one a day for 14
 - d. one as needed every day for 14 days

- 4. Did the patient have any trouble urinating?
 - a. yes
 - b. no
- 5. What was the condition of the right testicle?
 - a. inflamed
 - b. enlarged
 - c. small
 - d. normal
 - e. had been excised
- 6. What was the result of the urinalysis?
 - a. not stated
 - b. normal
 - c. not performed, because the patient could not void
 - d. hematuria
 - e. glucosuria

Medical Record 14-2

FOR ADDITIONAL STUDY

c. nausea and vomiting

d. bleeding

e. all of the above f. none of the above

Larry Phelps, age 31, has been happily married to his wife, Nancy, for almost five years. They have two children. The second child caused some health problems for Nancy, and her obstetrician recommended that they have no more children because of the risk to her health. After trying different forms of birth control, Nancy and Larry decided that he would have a vasectomy. His doctor referred him to Dr. Jerard Derrick in the urology department at Central Medical Group, Inc. Medical Record 14-2 is a series of three chart notes written by Dr. Derrick after first meeting with Mr. Phelps to schedule surgery, after the surgery and discharge, and after seeing Mr. Phelps in a follow-up 10 days later.

Read Medical Record 14-2 (pages 699-700) for Larry Phelps, then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 14-2

1.	Below are medical terms used in this record that you have not yet encountered in this text. Underline each where it appears in the record, and define each term below.
	sterility
	infiltrated
	resect
	ejaculation
	induration
2.	The medical record suggests that Mr. Phelps signed which of these before surgery?
	a. last will and testament
	b. consent form
	c. application to sperm bank
	d. none of the above
3.	In your own words, not using medical terminology, briefly summarize the procedure Dr. Derrick performed:
4.	Complications of the surgery included which of the following?
	a. sterility
	b. fever

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5.	Translate the instruction for the immediate postoperative medication (how much, how often):				
6.	Which of the following were symptoms that Mr. Phelps reported to Dr. Derrick on his follow-up visit 10 days after surgery?				
	a. fever				
	b. bleeding				
	c. pain in scrotum				
	d. impotence				
	e. suture loosening				
7.	When Dr. Derrick examined Mr. Phelps in the follow-up visit, which of the following objective findings did he note? Mark all that are appropriate.				
	a. minor bruising in the scrotum				
	b. small area of hard tissue at the left vasectomy site				
	c. bleeding at the left vasectomy site				
	d. pain at the left vasectomy site				
	e. very sore, elevated mass at the right vasectomy site				
	f. bleeding at the right vasectomy site				
	g. pain at the right vasectomy site				
	h. hard tissue areas along the upper scrotum				
	i. black and blue penis				
8.	In your own words, define the diagnosis Dr. Derrick made in the follow-up visit:				
	·				
9	Franslate Dr. Derrick's medication instructions after the follow-up visit:				
٠.	Medication Strength How Often				
	Medication Strength Tiow Otten				

Medical Record 14-2: For Additional Study

CENTRAL MEDICAL GROUP, INC.

Department of Urology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

PROGRESS NOTES

PHELPS, LAWRENCE

June 4, 20xx

This 31-year-old male desires vasectomy for sterility. He and his wife have **SUBJECTIVE:**

two children. He states that another pregnancy would put his wife at health

OBJECTIVE: Normal genitalia with single vas bilaterally.

ASSESSMENT: The procedure, goals and risks were thoroughly discussed with the aid of

pictures. The vasectomy booklet and consent form were provided to the

patient.

PLAN: Schedule bilateral vasectomy.

DL:ti T:6/7/20xx

Deurh, M.O.

J. Derrick, M.D.

June 10, 20xx

PROCEDURE: Bilateral vasectomy.

> The patient was placed supine on the table; and the scrotum was shaved, prepped, and draped in the usual fashion. The right testicle was grasped, and the right vas was brought to the skin and was infiltrated with 1% Xylocaine. The vas was freed through a small incision. A segment was resected, and the ends were cauterized and tied with 3-0 silk suture. The skin was closed with 4-0 chromic suture. The same procedure was repeated on the left. There

were no complications or bleeding.

PLAN: The patient is discharged to the care of his wife with an Rx for Darvocet-N,

> 100 mg, 1 q 4 h p.r.n. pain. He has been given a post-vasectomy instruction sheet. He is asked to call if there are any problems. He was also instructed

to submit a semen specimen for analysis after 15-20 ejaculations.

DL:ti T:6/12/20xx J. Derrick, M.D.

Medical Record 14-2: For Additional Study (Continued)

CENTRAL MEDICAL GROUP, INC.

Department of Urology

201 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-8888 • FAX: (012) 125-3434

PROGRESS NOTES

PHELPS, LAWRENCE

June 20, 20xx

The patient has had pain in the right scrotum since surgery which became **SUBJECTIVE:**

worse yesterday with pain in his right back. He states he has had no fevers,

nausea, or vomiting.

1) Mild scrotal ecchymoses inferiorly. Normal testes and epididymides. **OBJECTIVE:**

2) Small induration at left vasectomy site without tenderness.

3) Exquisitely tender 1.5 cm nodule at right vasectomy site; no induration in

upper scrotum or cord.

ASSESSMENT: Probable small hematoma at right vasectomy site.

Rx: Cipro 500 mg b.i.d. x 5 d PLAN:

Darvocet-N 100 mg q 4 h p.r.n. pain

ibuprofen p.r.n.

RTO in one week.

DL:ti T:6/22/20xx

ANSWERS TO PRACTICE EXERCISES

1. oligo/sperm/ia P R

few or deficient/sperm/ condition of

- 2. perineo/plasty CF perineum/surgical repair
- or reconstruction test/algia S R testis or testicle/pain
- 4. balan/ic R

glans penis/pertaining to

5. prostato/megaly S CF

prostate/enlargement

6. orchid/ectomy

testis or testicle/excision (removal)

7. an/orch/ism

P R without/testis or testicle/condition of

- 8. vas/ectomy vessel/excision (removal)
- 9. a/sperm/ia R S without/sperm (seed)/condition of
- 10. prostato/rrhea CF prostate/discharge
- 11. balan/itis R glans penis/inflammation

- 12. orchio/plasty **CF** S testis or testicle/surgical repair or reconstruction
- 13. spermato/cele **CF** sperm (seed)/pouching or hernia
- 14. epididymo/tomy CF epididymis/incision
- 15. vaso/vaso/stomy CF CF vessel/vessel/creation of an opening
- 16. anorchism
- 17. balanitis
- 18. erectile dysfunction
- 19. varicocele
- 20. seminoma
- 21. azoospermia
- 22. oligospermia
- 23. orchiopexy
- 24. resectoscope
- 25. benign prostatic hyperplasia or hypertrophy
- 26. hydrocele
- 27. vasectomy
- 28. Peyronie disease
- 29. circumcision
- 30. cryptorchism or cryptorchidism
- 31. digital rectal exam
- 32. endorectal or transrectal sonogram of prostate
- 33. glans penis
- 34. aspermia
- 35. c
- 36. d

- 37. f
- 38. e
- 39. a
- 40. b
- 41. prostate-specific antigen
- 42. benign prostatic hyperplasia or hypertrophy
- 43. transurethral resection of the prostate
- 44. digital rectal exam
- 45. biopsy
- 46. orchi/o
- 47. perine/o
- 48. spermat/o
- 49. vas/o
- 50. balan/o
- 51. epididym/o
- 52. vas deferens
- 53. urethra
- 54. glans penis
- 55. testis
- 56. bladder
- 57. prostate
- 58. perineum
- 59. epididymis
- 60. phimosis
- 61. oligospermia
- 62. azoospermia 63. anorchism
- 64. balanitis
- 65. cryptorchism
- 66. hypospadias
- 67. chlamydia
- 68. syphilis
- 69. prostate
- 70. epididymis
- 71. perineum
- 72. penis
- 73. gonorrhea

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 14-1: Chart Note

2. b 3. b 4. b 5. c 6. b

Medical Record 14-2: For Additional Study

See CD-ROM for answers.





CHAPTER 15

Female Reproductive System

✓ Chapter 15 Checklist	LOCATION
☐ Read Chapter 15: Female Reproductive System and complete all programmed review segments.	pages 703–750
☐ Review the starter set of flash cards and term components related to Chapter 15.	back of book
☐ Complete the Chapter 15 Practice Exercises and Medical Record Analysis 15-1.	pages 758–765
□ Complete Medical Record Analysis 15-2 For Additional Study.	pages 766-769
□ Complete the Chapter 15 Exercises by Chapter.	CD-ROM
☐ Complete the Chapter 15 Review and Test Modes.	CD-ROM
☐ Review the Pronunciation Drill for the Chapter 15 terms.	CD-ROM

FEMALE REPRODUCTIVE SYSTEM OVERVIEW

Functions of the female reproductive system:

- Produce and maintain ova
- Provide a place for the implantation and nurturing of the fertilized ovum through the embryonic and fetal stages to birth
- Produce some female sex hormones



Self-Instruction: Combining Forms

Study the following:

COMBINING FORM	MEANING
cervic/o	neck or cervix
colp/o, vagin/o	vagina (sheath)
episi/o, vulv/o	vulva (covering)
gynec/o	woman
hyster/o, metr/o, uter/o	uterus
lact/o	milk
mast/o, mamm/o	breast
men/o	menstruation
obstetr/o	midwife
oophor/o, ovari/o	ovary
ov/i, ov/o	egg
pelv/i	pelvis (basin); hip bone
salping/o	uterine (fallopian) tube; also, eustachian tube
toc/o	labor or birth
-arche (suffix)	beginning

Programmed Review: Combining Forms

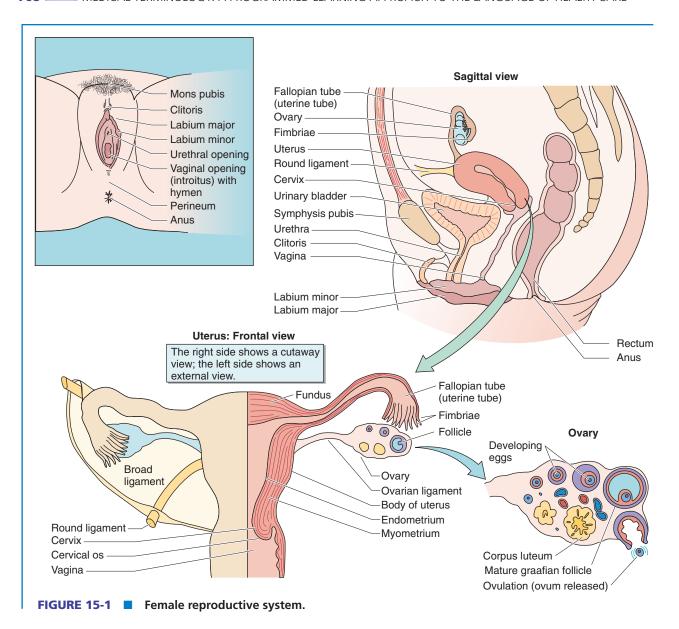
ANSWERS	REVIEW
cervic/o	15.1 The Latin word cervix means neck; the cervix in the female is like a neck between the vagina and the uterus. The combining term for cervix is The common adjective form, for example, is cervical.
vagin/o colp/o	15.2 As often happens, there are two combining forms for vagina, one from a Latin word and one from a Greek word. The Latin word vagina means sheath (the vagina sheaths the penis during intercourse); the combining form is The Greek word kolpos means a hollow; the combining form is Using the latter
-scope colposcope	combining form and the suffix for an instrument of examination,, forms the term for a special kind of scope designed to examine the vagina:

ANSWERS	REVIEW
mast/o, mamm/o	mammogram is an x-ray of the breast. The two combining forms for breast are and
menstruation men/o menopause	15.10 From the Greek word men, meaning month, comes the combining form that means, which generally occurs about once a month in the adult female. The combining form is The time later in life when menstruation permanently stops (pauses) is
ovari/o oophor/o -itis ovary	15.11 Once again, the two combining forms for the ovary come from Latin and Greek roots. The adjective ovarian is built from the combining form, which is from the Latin word for ovary. The Greek word oophoros means egg-bearing, giving rise to the combining form Recall that the common suffix for inflammation is Oophoritis is an inflammation of the
egg ov/i ov/o ovum or egg	15.12 An ovum is the woman's, which is produced in the ovary. The two combining forms for egg are very similar: and Ovigenesis is the process of the formation and development of the
salping/o inflammation	15.13 The Greek word salpinx means trumpet or tube. It gives rise to the combining form, which refers to the uterine or fallopian tube, which carries the ovum from the ovary to the uterus. Salpingitis is an of the uterine or fallopian tube.
basin pertaining to pelvic	15.14 <i>Pelv/i</i> , a Latin combining form referring to the shape of a, was used to name the pelvis, a basin-like ring of skeletal bones at the base of the spine that is bordered on each side by the hip bones. The reproductive organs are contained in the space formed by these bones. Using the combining form meaning pelvis combined with the suffix <i>-ic</i> , meaning, the term for this space is the cavity.
toc/o difficult	15.15 The combining form for birth is Tocophobia, for example, is a morbid fear of childbirth. Recall that the prefix <i>dys-</i> means faulty, painful, or, and the suffix <i>-ia</i> refers

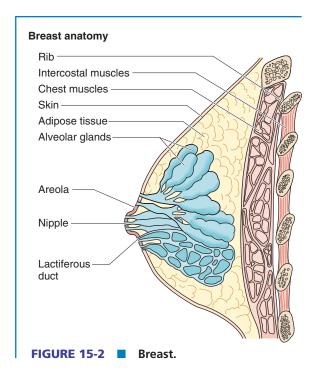
ANSWERS	REVIEW
condition of dystocia	to a Therefore, the term for a difficult childbirth is
-arche menarche	15.16 The suffix meaning beginning is Using the combining form for menstruation, the term for the beginning of menstruation is

Self-Instruction: Anatomic Terms (Fig. 15-1)

TERM	MEANING		
uterus yū'tĕr-ŭs	womb; a pear-shaped organ in the pelvic cavity in which the embryo and fetus develops		
fundus fŭn'dŭs	upper portion of the uterus above the entry to the uterine tubes		
endometrium en-dō-mē'trē-ŭm	lining of the uterus, which is shed approximately every 28 to 30 days in a nonpregnant female during menstruation		
myometrium mī-ō-mē'trē-ŭm	muscular wall of the uterus		
uterine tubes yū'tĕr-in tūbz fallopian tubes f ă-lō'pē-ăn tūbz	tubes extending from each side of the uterus toward the ovary that provide a passage for ova to the uterus		
adnexa ad-nek'să	uterine tubes and ovaries (uterine appendages)		
right uterine appendage rīt yū'tĕr-in ă-pen'dij	right tube and ovary		
left uterine appendage left yū'tĕr-in ă-pen'dij	left tube and ovary		
ovary ō'vă-rē	one of two glands located on each side of the pelvic cavity that produce ova and female sex hormones		
cervix sĕr'viks	neck of the uterus		
cervical os sĕr'vi-kăl os	opening of the cervix to the uterus		
vagina vă-jī'nă	tubular passageway from the cervix to the outside of the body		



TERM	MEANING	
vulva vŭl'vă	external genitalia of the female	
labia lā'bē-ă	folds of tissue on either side of the vaginal opening; known as the labia majora and labia minora	
clitoris klit'ō-ris	female erectile tissue in the anterior portion of the vulva	
hymen <i>hī'men</i>	fold of mucous membrane that encircles the entrance to the vagina	
introitus in-trō'i-tŭs	entrance to the vagina	
Bartholin glands bahr'thō-lin glanz		



TERM	MEANING	
perineum per-i-nē'ŭm	region between the vulva and anus	
mammary glands (Fig. 15-2) mam'ă-rē glanz	two glands in the female breasts that are capable of producing milk	
mammary papilla mam'ă-rē pă-pil'ă	nipple	
areola ă-rē'ō-lă	dark-pigmented area around the nipple	
embryo (Fig. 15-3) em'brē-ō	the developing organism from fertilization to the end of the eighth week	



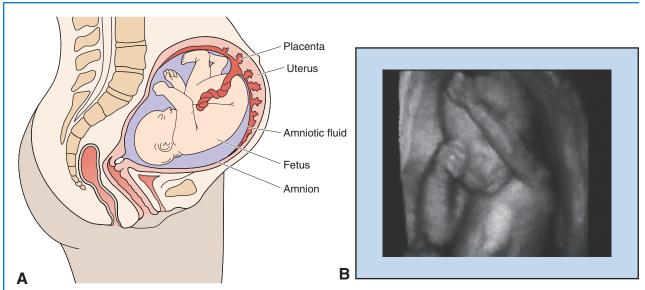


FIGURE 15-4 A. Fetus in utero. B. Three-dimensional sonogram of fetus "waking up."

TERM	MEANING
fetus (Fig. 15-4) <i>fē'tŭs</i>	the developing organism from the ninth week to birth
placenta plă-sen'tă	vascular organ that develops in the uterine wall during pregnancy to provide nourishment for the fetus (placenta = cake)
amnion am'nē-on amniotic sac am-nē-ot'ik sak	innermost of the membranes surrounding the embryo in the uterus, filled with amniotic fluid
amniotic fluid am-nē-ot'ik flū'id	fluid within the amniotic sac that surrounds and protects the fetus
meconium mē-kō'nē-йт	intestinal discharges of the fetus that form the first stools in the newborn

Programmed Review: Anatomic Terms

ANSWERS	REVIEW
	15.17 The external genitalia of the female are collectively called the
vulva	The region between the vulva in the female (the
perineum	scrotum in the male) and the anus is called the
	15.18 The vulva consist of the folds of tissue on either side of the
labia	vaginal opening, called the majora and minor, and the
clitoris	female erectile tissue, called the The labia majora are
	the larger tissue folds, and within them are the labia minora, the
	smaller tissue folds.

ANSWERS	REVIEW
hymen	15.19 Inward from the labia, the fold of mucous membrane encircling the entrance to the vagina is called the
introitus Bartholin	15.20 The term for the entrance to the vagina is used in medical language for the entrance to other hollow organs as well. It comes from the Latin intro-eo, meaning to go into. This term is Two glands located on either side of the vaginal opening, called glands, secrete a lubricant during intercourse.
cervix neck cervical os	and the outside of the body, where the penis is inserted during intercourse. The cervix is the of the uterus. The term for the opening of the cervix to the uterus, using the Latin word os (meaning mouth) is The term os is used in other anatomic areas to indicate an opening to a hollow organ or canal.
uterus fundus fundi	15.22 The cervix is the neck of the (the womb), where, after conception, the embryo and fetus develop. The upper part of the uterus, above the uterine tubes, is called the, from the Latin word fundus, referring to the largest part of a sac farthest from the opening. The plural of fundus is
myometrium within endometrium	15.23 The combining form <i>metr/o</i> refers to the The suffix <i>-ium</i> refers to a structure or tissue. The combining form <i>my/o</i> means muscle. Therefore, the term for the muscular wall of the uterus is the Recall that the prefix <i>endo-</i> means Within the uterus is a tissue that forms its lining, which is shed during menstruation and is called the
ova ovaries ovum	15.24 Human eggs, called, are produced in each of the two The ovaries also secrete female sex hormones. The singular of ova is
fallopian appendage	15.25 The tubes through which the ova move from the ovaries to the uterus are called the or uterine tubes. The right tube and ovary collectively are called the right uterine The left tube and ovary are called the left

ANSWERS	REVIEW
uterine adnexa	appendage. The collective term for both uterine appendages is the
uterus ovum	15.26 Sperm deposited in the vagina during intercourse swim through the cervix into the Sperm may meet an egg, or, in the uterus or fallopian tubes, and fertilization may occur.
embryo endometrium	15.27 If fertilization occurs, the resultant developing organism, called an for the first 8 weeks, is implanted in the lining of the uterus, called the
placenta	15.28 The vascular (blood-rich) organ that develops in the uterine wall to nourish the embryo and fetus is called the
amniotic sac	15.29 The membrane sac surrounding the embryo is the It is filled with a protective fluid called amniotic
fetus	15.30 After 8 weeks, the developing organism is no longer called an embryo; instead, it is called a
meconium	15.31 The first stools of a newborn develop from intestinal discharges of the fetus, called
mamm/o mammary	15.32 Recall that the two combining forms for breast are <i>mast/o</i> and Using the adjective form of the latter, the term for the glands in the female breast that make milk is glands.
nipple	15.33 The mammary papilla is the of the breast, through which milk flows to the infant.

Self-Instruction: Gynecologic Symptomatic Terms

TERM	MEANING
amenorrhea ă-men-ō-rē'ă	absence of menstruation
dysmenorrhea dis-men-ō-rē'ă	painful menstruation

TERM	MEANING
oligomenorrhea ol'i-gō-men-ō-rē'ă	scanty menstrual period
anovulation an-ov-yū-lā'shŭn	absence of ovulation
dyspareunia dis-pa-rū'nē-ă	painful intercourse (coitus) (<i>dys</i> = painful; <i>para</i> = alongside of; <i>eunia</i> = bed)
leukorrhea lū-kō-rē'ă	abnormal white or yellow vaginal discharge
menorrhagia men-ō-rā'jē-ă	excessive bleeding at the time of menstruation (menses)
metrorrhagia mē'trō-rā'jē-ă	bleeding from the uterus at any time other than normal menstruation
oligo-ovulation ol'i-gō-ov'yū-lā'shŭn	irregular ovulation

Programmed Review: Gynecologic Symptomatic Terms

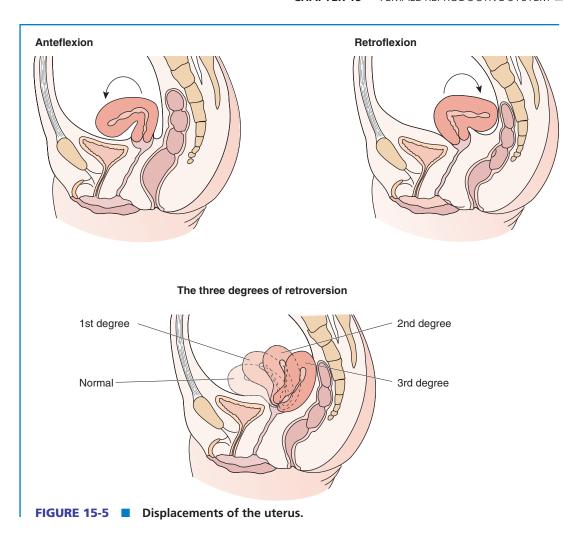
ANSWERS	REVIEW
men/o discharge, without	15.34 The combining form for menstruation is A number of symptomatic terms for different menstrual conditions are made with this combining form. Recall that the suffix <i>-rrhea</i> means The prefix <i>a</i> - means
amenorrhea	Therefore, the term for being without menstrual discharge (the absence of menstruation) is
painful	15.35 The prefix <i>dys-</i> means faulty, difficult, or The term for painful menstruation (menstrual discharge) is
dysmenorrhea	
deficient oligomenorrhea	15.36 The prefix <i>oligo-</i> means few or The term for scanty (deficient) menstrual discharge is
oligo-ovulation	15.37 The same prefix (<i>-oligo</i>) is used in the term for irregular (deficient) ovulation:
without anovulation	15.38 The prefix <i>an-</i> means The absence of ovulation, therefore, is termed
blood or bleeding menorrhagia	15.39 The suffix <i>-rrhagia</i> means to burst forth, usually referring to Excessive bleeding during menstruation is therefore called

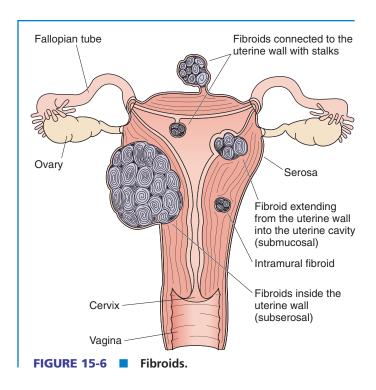
ANSWERS	REVIEW
uterus	15.40 The combining form <i>metr/o</i> means Using
	this combining form, excessive bleeding from the uterus, other than
metrorrhagia	in normal menstruation, is called
	15.41 The combining form <i>leuk/o</i> means white. An abnormal white
leukorrhea	or yellow discharge (from the vagina) is termed
painful, difficult, or faulty	15.42 Using the prefix <i>dys-</i> (meaning), painful
dyspareunia	intercourse is called



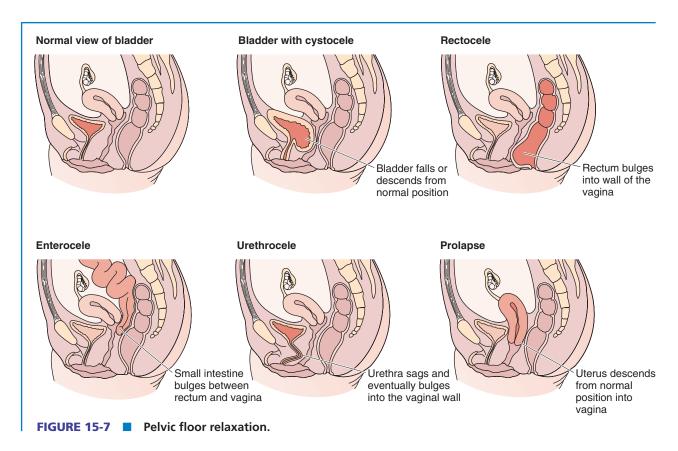
Self-Instruction: Gynecologic Diagnostic Terms: General

TERM	MEANING
cervicitis ser-vi-sī'tis	inflammation of the cervix
congenital anomalies kon-jen'ĭ-tăl ah-nom'ah-lēz congenital irregularities kon-jen'ĭ-tăl ir-reg'yū-lār'ĭ-tēz	birth defects that cause abnormal development of an organ or a structure (e.g., double uterus or absent vagina)
dermoid cyst dĕr'moyd sist	congenital tumor composed of displaced embryonic tissue (teeth, bone, cartilage, and hair); typically found in an ovary and usually benign
displacement of uterus (Fig. 15-5) dis-plās'ment of yū'tĕr-ŭs	displacement of the uterus from its normal position
anteflexion an-tē-flek'shŭn	abnormal forward bending of the uterus (<i>ante</i> = before; <i>flexus</i> = bend)
retroflexion re-trō-flek'shŭn	abnormal backward bending of the uterus
retroversion re-trō-vĕr'zhŭn	backward turn of the whole uterus; also called tipped uterus
endometriosis en'dō-mē-trē-ō'sis endometritis en'dō-mē-trī'tis	condition characterized by migration of portions of endometrial tissue outside the uterine cavity inflammation of the endometrium
fibroid (Fig. 15-6) fī'broyd fibromyoma fī'brō-mī-ō'mă leiomyoma lī'ō-mī-ō'mă	benign tumor in the uterus composed of smooth muscle and fibrous connective tissue





prō-laps'



TERM	MEANING
sal-pin-jī'tis	inflammation of a fallopian tube
vaginitis vaj-i-nī'tis	inflammation of the vagina with redness, swelling, and irritation; often caused by a specific organism, such as <i>Candida</i> (yeast) or <i>Trichomonas</i> (a sexually transmitted parasite)
atrophic vaginitis ă-trof'ik vaj-i-nī'tis	thinning of the vagina and loss of moisture because of depletion of estrogen, which causes inflammation of tissue
vaginosis vaj-i-nō'sis	infection of the vagina, with little or no inflammation, characterized by a milk-like discharge and an unpleasant odor; also known as nonspecific vaginitis

Programmed Review: Gynecologic Diagnostic Terms: General

ANSWERS	REVIEW
-itis	15.43 The suffix for inflammation is
cervicitis	Inflammation of the cervix is called
	15.44 The two combining forms for the ovaries are <i>ovari/o</i>
oophor/o	and Using the latter, inflammation of the
oophoritis	ovaries is termed

ANSWERS	REVIEW
vesicovaginal	the bladder (<i>vesic/o</i>) and the vagina is called a fistula.
men/o menopause	15.52 Again, the combining form for menstruation is A cessation (pause) of menstruation, usually occurring in older women, is called
uterine or fallopian	15.53 A parovarian cyst is a cyst in the tube.
pelvic adhesions	15.54 Scarring of tissue in the pelvic cavity resulting from endometriosis, infection, or injury can cause pelvic tissues to adhere together; this is called
pelvic inflammatory	15.55 Inflammation of the pelvic cavity, including the fallopian tubes, ovaries, and endometrium, is called disease (PID).
cervical neoplasia dysplasia cervical intra	15.56 Neoplasia is a general term describing a new formation of abnormal tissue, which may be benign or malignant. Any new formation of abnormal cervical tissue is called The term describing a condition of faulty formation of tissue with cancerous potential is Cervical dysplasia is also known as epithelial neoplasia (CIN) and is
mild moderate severe dysplasia in situ	classified according to the extent of abnormal cell formation. CIN-1 refers to dysplasia, CIN-2 refers to dysplasia, and CIN-3 refers to Malignant neoplasia of the cervix that is localized without any spread to adjacent structures is called carcinoma (CIS) of the cervix.
pelvic floor prolapse	15.57 Pelvic organs are supported with ligaments and other connective tissue. Relaxation of these supportive tissues, called relaxation, may allow anatomic changes or displacements. A descent of the uterus down the vaginal canal is called a
pouching rectocele	15.58 Recall that the suffix <i>-cele</i> means hernia or A pouching of the rectum (<i>rect/o</i>) into the vagina is called a

ANSWERS	REVIEW
urethrocele	15.59 A pouching of the urethra (<i>urethr/o</i>), which is the tube that carries urine to outside of the body, into the vagina is called a
cystocele	15.60 <i>Cyst/o</i> is a combining form for bladder. A pouching of the bladder into the vagina is called a
pouch	15.61 An enterocele is aing sac of peritoneum between the vagina and the rectum.
-itis vaginitis atrophic	15.62 Recall that the suffix meaning inflammation is Inflammation of the vagina is called and is often caused by a specific organism such as <i>Candida</i> (yeast) or <i>Trichomonas</i> (a sexually transmitted parasite). The specific kind of vaginitis involving thinning of the vagina and loss of moisture because of depletion of estrogen is called vaginitis.
condition of vaginosis	15.63 The suffix <i>-osis</i> means increase or, simply, a A vaginal condition involving infection but little or no inflammation is called



Self-Instruction: Gynecologic Diagnostic Terms: Sexually Transmitted Diseases

TERM	MEANING
MAJOR BACTERIAL SEXU	ALLY TRANSMITTED DISEASES (STDs)
chlamydia kla-mid'ē-ă	most common sexually transmitted bacterial infection in North America; often occurs with no symptoms and is treated only after it has spread, such as after causing pelvic inflammatory disease (PID)
gonorrhea gon-ō-rē'ă	contagious inflammation of the genital mucous membranes caused by invasion of the gonococcus <i>Neisseria gonorrhea;</i> the term refers to the urethral discharge characteristic of the infection, which was first thought to be a leakage of semen (<i>gono</i> = seed; <i>rrhea</i> = discharge); the genus is named for the Polish dermatologist Albert Neisser

TERM	MEANING
syphilis sif'i-lis	infectious disease caused by a spirochete transmitted via direct, intimate contact and that may involve any organ or tissue over time; usually manifests first on the skin, with the appearance of small, painless, red papules that erode and form bloodless ulcers called chancres

MAJOR VIRAL STDs

hepatitis B virus (HBV)

hep-ă-tī'tis B vī'rŭs

herpes simplex virus type 2 (HSV-2) (Fig. 15-8) hĕr'pēz sim'pleks vī'rŭs tīp 2

human immunodeficiency virus (HIV)

hyū'măn im'yū-nō-dēfish'en-sē vī'rŭs

human papilloma virus **(HPV)** (Fig. 15-9) hyū'măn pap-i-lō'mă vī'rŭs

condyloma acuminatum (pl. condylomata acuminata)

kon-di-lō'mă ă-kyū'minā'tŭm (kon-di-lō-mah'tă ăkyū'mi-nā' tă)

virus that causes an inflammation of the liver: transmitted through any body fluid, including vaginal secretions, semen, and blood

virus that causes ulcer-like lesions of the genital and anorectal skin and mucosa; after the initial infection, the virus lies dormant in the nerve cell root and may recur at times of stress

virus that causes acquired immunodeficiency syndrome (AIDS), permitting various opportunistic infections, malignancies, and neurologic diseases; contracted through exposure to contaminated blood or body fluid (e.g., semen or vaginal secretions)

virus transmitted by direct sexual contact; infection can manifest on the skin or mucous membranes of the genitals

lesion that appears as a result of human papilloma virus; on the skin, the lesions appear as cauliflower-like warts, and on mucous membranes, they have a flat appearance; also known as venereal or genital warts



FIGURE 15-8 Herpes simplex virus type 2.



FIGURE 15-9 Condylomata acuminata (genital warts) caused by human papilloma virus (HPV).

Programmed Review: Gynecologic Diagnostic Terms: Sexually Transmitted Diseases

ANSWERS	REVIEW
chlamydia	by bacteria or viruses. The most common bacterial STD in North America is Like many bacterial diseases, chlamydia gets its name from the Latin genus name for the bacteria: <i>Chlamydia</i> . It may have no symptoms until it spreads, and it can cause pelvic inflammatory disease (PID).
gonorrhea	15.65 Another bacterial STD, the genus of which was named for the Polish dermatologist Albert Neisser, is called It causes an inflammation of genital mucous membranes.
syphilis	15.66 The bacterial STD caused by a spirochete that over time can involve any body tissue or organ is called
hepatitis B	15.67 Several viruses also cause STDs. The virus that causes inflammation of the liver, which can be spread through any body fluid, is virus (HBV).

ANSWERS	REVIEW
herpes simplex virus	15.68 HSV-2 is the abbreviation for the STD virus which typically lies dormant after the initial infection but recurs at times of stress: type 2. It causes ulcer-like lesions on genital and anorectal skin.
human immunodeficiency virus	15.69 The virus that causes acquired immunodeficiency syndrome (AIDS) is (HIV).
papilloma condylomata, acuminata	virus, which is characterized by lesions on the skin or mucous membranes. A condyloma is a warty growth; the plural of this term is Condylomata
constitution and accommendation	are warty growths in the genital area caused by HPV.



Self-Instruction: Gynecologic Diagnostic Terms: Breasts

TERM	MEANING
adenocarcinoma of the breast ad'ĕ-nō-kar-si-nō'mă of the brest	malignant tumor of glandular breast tissue
amastia ă-mas'tē-ă	absence of a breast
fibrocystic breasts fī-brō-sis'tik brests	benign condition of the breast consisting of fibrous and cystic changes that render the tissue more dense; patient feels painful lumps that fluctuate with menstrual periods
gynecomastia gī'nĕ-kō-mas'tē-ă	development of mammary glands in the male caused by altered hormone levels
hypermastia hī-pĕr-mas'tē-ă macromastia mak-rō-mas'tē-ă	abnormally large breasts
hypomastia hī'po-mas'tē-ă micromastia mī'kro-mas'tē-ă	unusually small breasts
mastitis mas-tī'tis	inflammation of the breast; most commonly occurs in women who are breastfeeding

TERM	MEANING
polymastia pol-ē-mas'tē-ă	presence of more than two breasts
polythelia pol-ē-thē'lē-ă supernumerary nipples sū-pĕr-nū'mĕr-ār-ē nip'ĕlz	presence of more than one nipple on a breast

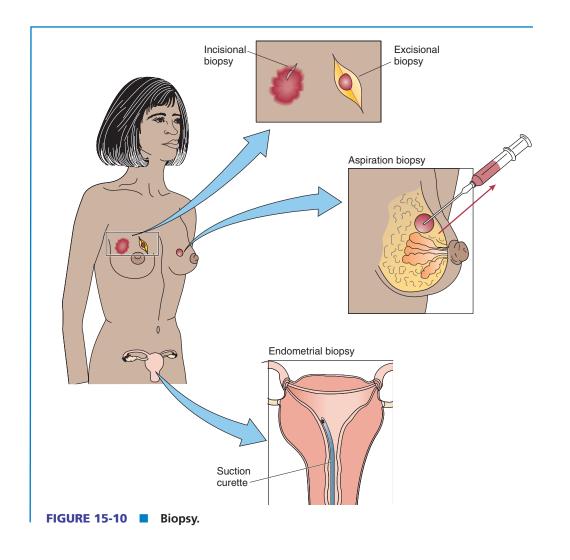
Programmed Review: Gynecologic Diagnostic Terms: Breasts

ANSWERS	REVIEW
mast/o condition of, without amastia	15.71 There are two combining forms for breast: <i>mamm/o</i> and The latter is used more frequently in gynecologic diagnostic terms. Recall that the suffix <i>-ia</i> means Thus, the condition of an absence of a breast is
excessive hypermastia large macromastia	15.72 The prefix <i>hyper-</i> means above or The condition of abnormally large breasts is called Recall that the prefix <i>macro-</i> means long or It is used to form a synonym for hypermastia:
hypo- micro- hypomastia, micromastia	15.73 The prefix with a meaning opposite to that of <i>hyper</i> - is The prefix with a meaning opposite to that of <i>macro</i> - is Therefore, two terms for unusually small breasts are and
many polymastia condition of	15.74 The prefix <i>poly-</i> means The condition of having more than two (many) breasts is termed The suffix <i>-ia</i> means
woman gynecomastia	15.75 The combining form <i>gynec/o</i> means The condition of a man developing mammary glands (i.e., developing like a woman) is called
-itis mastitis	15.76 Again, the suffix denoting inflammation is An inflammation of the breast is called
fibrocystic	15.77 A benign condition of the breasts in which fibrous and cystic changes occur is referred to as breasts.
malignant	15.78 An adenocarcinoma of the breast is a tumor of glandular breast tissue.

ANSWERS	REVIEW
	15.79 The Greek word for nipple is thele. The prefix <i>poly-</i> means
many	The condition of having more than one nipple on a
polythelia	breast is called These are also called
numerary	super nipples.

Self-Instruction: Gynecologic Diagnostic Tests and Procedures

TEST OR PROCEDURE	EXPLANATION
biopsy (Bx) (Fig. 15-10) <i>bī'op-sē</i>	removal of tissue for microscopic pathologic examination
aspiration biopsy as-pi-rā'shŭn bī'op-sē needle biopsy nēd'ĕl bī'op-sē	needle draw of tissue or fluid from a cavity for cytologic examination



TEST OR PROCEDURE

endoscopic biopsy en'dō-skop'ik bī'op-sē

excisional biopsy ek-sizh'ŭn-ăl bī'op-sē

incisional biopsy in-si'zhŭn-năl bī'op-sē

stereotactic breast biopsy

ster'ē-ō-tak'tik brest bī'op-sē

sentinel node breast biopsy sen'tĭ-nel nōd bī'op-sē

EXPLANATION

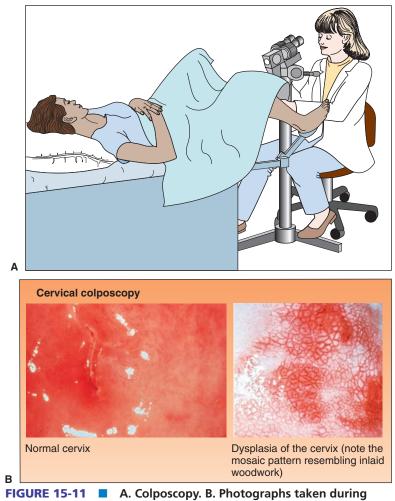
removal of a specimen for biopsy during an endoscopic procedure (e.g., colposcopy)

removal of an entire lesion for microscopic examination

removal of a piece of suspicious tissue for microscopic examination (e.g., cervical or endometrial biopsy)

use of x-ray imaging, a specialized stereotactic frame, and a computer to calculate, precisely locate, and direct a needle into a breast lesion to remove a core specimen for biopsy

biopsy of the sentinel node (the first lymph node to receive lymphatic drainage from a tumor) in a breast with early cancer to determine metastases and, if no malignancy is found, to avoid the extensive removal of axillary nodes, which causes lymphedema (swelling under the arms); includes radionuclide imaging to locate the sentinel node (sentinel refers to guarding a point of entry)



cervical colposcopy.

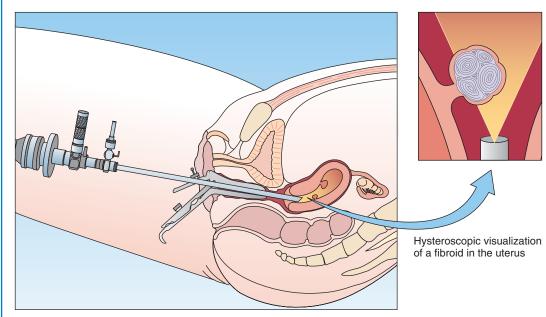
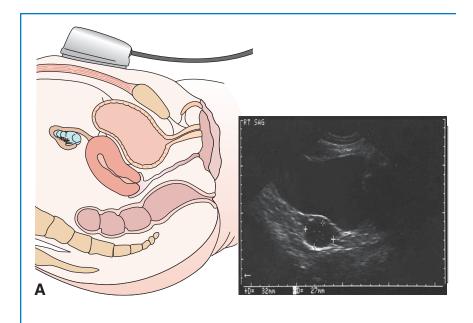


FIGURE 15-12 Hysteroscopy.

TEST OR PROCEDURE	EXPLANATION
colposcopy (Fig. 15-11) kol-pos'kŏ-pē	examination of the vagina and cervix using a colposcope, a specialized microscope which often has a camera attachment for photographs; used to document findings and for follow-up treatments
hysteroscopy (Fig. 15-12) <i>his-tĕr-os'kŏ-pē</i>	use of a hysteroscope to examine the intrauterine cavity for assessment of abnormalities (e.g., polyps, fibroids, or anomalies)
magnetic resonance imaging (MRI) mag-net'ik rez'ō-nănts im'ă-jing	use of nonionizing images to detect gynecologic conditions (e.g., anomalies of the pelvis or soft tissues of the breast) or to stage tumors arising from the endometrium or cervix
Papanicolaou (Pap) smear pa-pă-ni'kō-lū (pap) smēr	study of cells collected from the cervix to screen for cancer and other abnormalities
radiography rā'dē-og'ră-fē	x-ray imaging
hysterosalpingogram his'tĕr-ō-sal-ping'gō-gram	x-ray of the fallopian tubes after injection of a contrast medium through the cervix; used to determine tubal patency (openness)
mammogram mam'ō-gram	low-dose x-ray imaging of breast tissue to detect neoplasms
pelvic sonography (Fig. 15-13) pel'vik sŏ-nog'ră-fē	ultrasound imaging of the female pelvis
endovaginal sonogram en'dō-vaj'i-năl son'ō-gram transvaginal sonogram tranz-vaj'ĭ-năl son'ō-gram	ultrasound image of the uterus, tubes, and ovaries made with the ultrasonic transducer within the vagina to detect conditions such as ectopic pregnancy or missed abortion



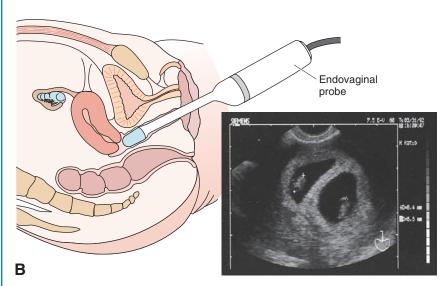


FIGURE 15-13 Pelvic sonography. A. Transabdominal imaging procedure. Inset, simple ovarian cyst. B. Endovaginal (transvaginal) imaging procedure. Inset, twin pregnancies.

TEST OR PROCEDURE EXPLANATION transvaginal sonographic image made as sterile saline is sonohysterogram son'ō-his-tĕr-ō-gram injected into the uterus; used to assess uterine pathology or hysterosonogram to determine tubal patency his-tēr-ō-son'ō-gram saline infusion sonogram sā'lēn in-fyū'zhŭn son'ō-gram transabdominal ultrasound image of the lower abdomen, including the bladder, uterus, tubes, and ovaries, to detect conditions sonogram trans-ab-dom'i-năl son'ō-gram such as cysts and tumors

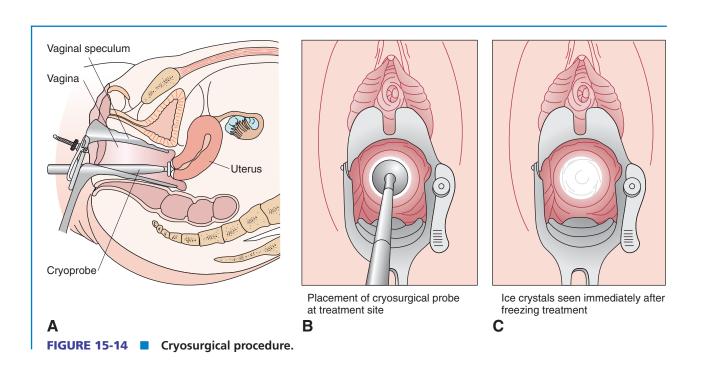
Programmed Review: Gynecologic Diagnostic Tests and Procedures

ANSWERS	REVIEW
biopsy	15.80 The removal of tissue from any part of the body for microscopic pathologic examination is called (Bx). Several forms of biopsies can be performed in the female reproductive system.
needle	Use of a special, hollow needle to draw tissue or fluid from a cavity is called an aspiration biopsy or a biopsy. If the entire lesion is removed (excised) for examination,
excisional endoscopic incisional	this is called an biopsy. Removal of the biopsy specimen during an endoscopic examination is called an biopsy. Cutting out (incising) a small tissue sample for examination is called an biopsy.
stereotactic breast	15.81 Use of a computer, x-ray imaging, and a specialized stereotactic frame to direct a needle into a breast lesion to remove a core specimen for biopsy is called a biopsy.
sentinel node biopsy	15.82 Sentinel refers to guarding a point of entry. The first lymph node to receive lymphatic drainage from a tumor therefore is referred to as the node. Removal and microscopic pathologic examination of this node in a breast with early cancer is called a sentinel
process colp/o colposcopy	15.83 Recall that the suffix <i>-scopy</i> means of examination with an instrument. The two combining forms for vagina are <i>vagin/o</i> and Using the latter form, the term for examination of the vagina using a specialized microscope is called
hyster/o	15.84 Recall that the combining forms for uterus are <i>metr/o</i> , <i>uter/o</i> , and Utilize the last form in the term for use of a special microscope to examine inside the uterus:
hysteroscopy	



Self-Instruction: Gynecologic Operative Terms: General

TERM	MEANING
adhesiolysis ad-hēz-ē-ōl'ĭ-sis adhesiotomy ad-hē-zē-ot'ŏ-mē	breaking down or severing of pelvic adhesions
cervical conization sĕr'vi-kăl kō-nī-zā'shŭn	removal of a cone-shaped portion of the cervix
colporrhaphy kol-pōr'ă-fē	suture to repair the vagina
colporrhaphy anterior repair kol-pōr'ă-fē an-tēr'ē-ōr rē-pār'	repair of a cystocele
colporrhaphy posterior repair kol-pōr'ă-fē pos-tēr'ē-ŏr rē-pār'	repair of a rectocele
colporrhaphy A&P repair kol-pōr'ă-fē ā and pē rē-pār'	anterior and posterior repair of cystocele and rectocele
cryosurgery (Fig. 15-14) krī-ō-sŭr'jĕr-ē	method of destroying tissue by freezing; used for treating dysplasia and early cancers
dilation and curettage (D&C) (Fig. 15-15) dī-lā'shŭn and kū-rĕ-tahzh'	dilation of the cervix and scraping of the endometrium to control bleeding, to obtain tissue for biopsy, or to remove polyps or products of conception



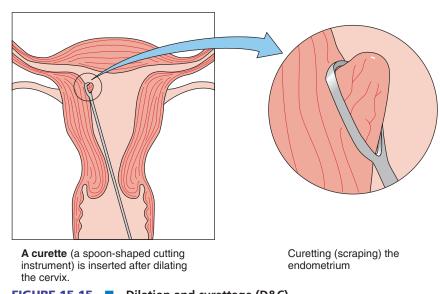


FIGURE 15-15 Dilation and curettage (D&C).

TERM	MEANING
hysterectomy his-tĕr-ek'tŏ-mē	removal of the uterus
abdominal hysterectomy ab-dom'i-năl his-tĕr-ek'tŏ-mē	removal of the uterus through an incision in the abdomen
vaginal hysterectomy vaj'i-năl his-tĕr-ek'tŏ-mē	removal of the uterus through the vagina
total hysterectomy tō'tăl his-ter-ek'tŏ-mē	removal of the uterus and the cervix
laparoscopy lap-ă-ros'kŏ-pē	inspection of the abdominal or pelvic cavity with a laparoscope, which is an endoscope used to examine the abdominal and pelvic regions
laparoscopic surgery lap-ă-ro-skop'ik sŭr'jĕr-ē	surgical procedures within the abdominal or pelvic region using a laparoscope
laser surgery lā'zer sŭr'jĕr-ē	use of a laser to destroy lesions or to dissect or cut tissue; used frequently in gynecology
loop electrosurgical excision procedure (LEEP) (Fig. 15-16) lūp ē-lek-trō-sŭr'jik-ăl ek-sizh'ŭn prō-sē'jŭr large-loop excision of the transformation zone (LLETZ) larj-lūp ek-sizh'ŭn of the trans-fōr-mā'shŭn zōn	use of electrosurgical or radio waves transformed through a loop-configured electrosurgical device to treat precancerous cervical lesions by simultaneous excisional biopsy and treatment of affected tissue (e.g., cervical dysplasia or human papilloma virus [HPV] lesions); note that the transformation zone is the area of the cervix (between the endocervix and ectocervix), where neoplasia (new abnormal cell formation) is most likely to arise
myomectomy mī-ō-mek'tŏ-mē	excision of fibroid tumors

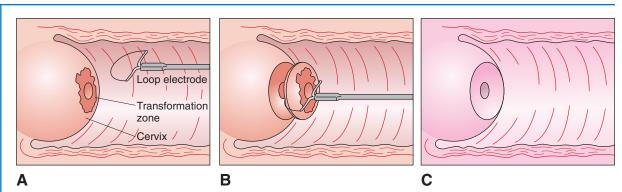


FIGURE 15-16 Loop electrosurgical excision procedure (LEEP) or large-loop excision of the transformation zone (LLETZ). A. Electrode approach. B. Removal of transformation zone. C. Excision site (region between endocervix and ectocervix).

TERM	MEANING
oophorectomy ō'of-ōr-ek'tŏ-mē	excision of an ovary
ovarian cystectomy ō-var'ē-ăn sis-tek'tō-mē	excision of an ovarian cyst
salpingectomy sal-pin-jek'tŏ-mē	excision of a uterine tube
bilateral salpingo- oophorectomy bi-lat'ĕr-ăl sal-ping'gō-ō- of-ō-rek'tŏ-mē	excision of both uterine tubes and ovaries
salpingotomy sal-pin-jek'tō-mē	incision into a fallopian tube; often performed to remove an ectopic pregnancy
sal-ping-gos'tō-mē	creation of an opening in the fallopian tube to open a blockage
tubal ligation tū'băl lī-gā'shŭn	sterilization of a woman by cutting and tying (ligating) the uterine tubes

Programmed Review: Gynecologic Operative Terms: General

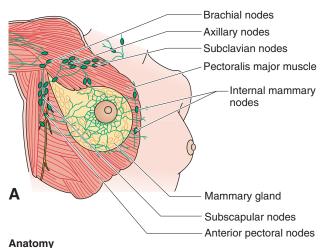
ANSWERS	REVIEW
excision	15.91 Recall that the suffix <i>-ectomy</i> means (or
hysterectomy	removal). Removal of the uterus is called
	When performed through an incision in the abdomen, it is called
abdominal	an hysterectomy. When removed through the
vaginal	vagina, it is called a hysterectomy. The total
total	removal of the uterus and cervix is called a
hysterectomy	

ANSWERS	REVIEW
anterior posterior repair pouching or hernia A&P	(in the front of the vagina) is an repair. The repair of a rectocele (the back of the vagina) is called a Recall that <i>-cele</i> means a When both the bladder and the rectum pouch into the vagina, creating both a cystocele and a rectocele, the repair of both is called an repair (anterior and posterior repair).
cryosurgery	15.103 The combining form <i>cry/o</i> means cold. Surgery that destroys tissue by freezing it is called This is used for treating dysplasia and early cancers.
cervix dilation, curettage	15.104 The D&C procedure is performed to control bleeding, to obtain tissue for biopsy, or to remove polyps or the products of conception. The is dilated, and the endometrium is scraped (curettage). The abbreviation D&C stands for and
examination laparoscopy	15.105 Recall that the suffix <i>-scopy</i> means process of with a visualizing instrument. The combining form <i>lapar/o</i> refers to the abdomen generally. Thus, the examination of the abdominal and pelvic cavity with a special scope is called a Surgery performed
laparoscopic	through the laparoscope is called surgery.
laser	15.106 A laser is often used in gynecologic procedures to destroy lesions or cut tissue. This is called surgery.
loop electrosurgical excision transformation zone	15.107 LEEP refers to a procedure using a loop-shaped device to make an electrosurgical excision of the transformation zone of the cervix; it is used to treat precancerous lesions, such as cervical dysplasia. LEEP is the abbreviation for procedure. This procedure is also called LLETZ, or large-loop excision of the

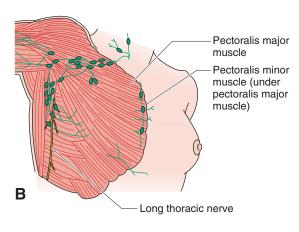
Self-Instruction: Gynecologic Operative Terms: Breasts

Study the following:

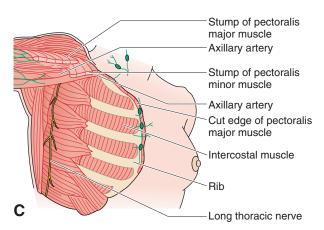
TERM	MEANING
lumpectomy lйmp-ek'tŏ-mē	excision of a breast tumor without removing any other tissue or lymph nodes; usually followed by radiation or chemotherapy if the tumor is cancerous
mastectomy (Fig. 15-17) mas-tek'tŏ-mē	removal of a breast
simple mastectomy sĭm'pel mas-tek'tŏ-mē	removal of an entire breast but with the underlying muscle and axillary lymph nodes left intact



Anatomy The breast, the underlying muscles, and the lymph nodes are the structures involved in breast cancer surgery. The lymph nodes, which act as barriers against bacteria or tumor cells, are useful in staging breast cancer.

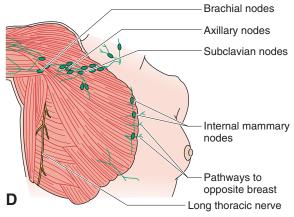


Simple MastectomyOnly the breast is removed. The underlying muscle and associated lymph nodes are not removed.



Radical Mastectomy

The breast, pectoralis muscles, and contents of the axilla (including lymph nodes and adipose tissue) are removed.



Modified Radical Mastectomy

The breast and lymph nodes of the axilla are removed. Occasionally, the pectoralis minor muscle is transected or removed to approach the lymph nodes.

FIGURE 15-17 A. Anatomy of breast. B–D. Mastectomy alternatives.

TERM	MEANING
radical mastectomy rad'i-kăl mas-tek'tŏ-mē modified radical mastectomy mod'i-fīd rad'i-kăl mas-tek'tō-mē	removal of an entire breast along with the underlying chest muscles and axillary lymph nodes removal of an entire breast and lymph nodes of the axilla
mammoplasty mam'ō-plas-tē augmentation mammoplasty (Fig. 15-18) awg-men-tā'shŭn mam'ō-plas-tē	surgical reconstruction of a breast reconstruction to enlarge the breast, often by insertion of an implant
reduction mammoplasty rē-dŭk'shŭn mam'ō-plas-tē	reconstruction to remove excessive breast tissue
mastopexy mas'tō-pek-sē	elevation of pendulous breast tissue

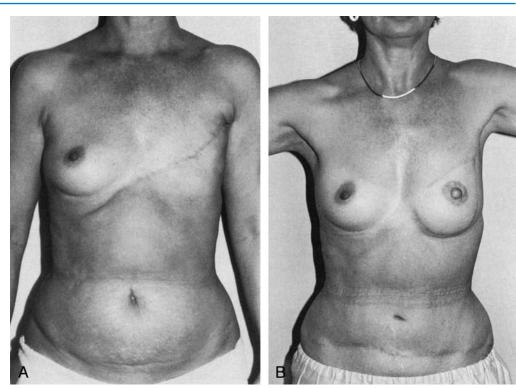


FIGURE 15-18 Augmentation mammoplasty. A. Left modified radical mastectomy in a 53-year-old woman (3 months postoperation). B. Same patient 10 months after augmentation mammoplasty.



Programmed Review: Gynecologic Operative Terms: Breasts

ANSWERS	REVIEW
-ectomy	15.108 The surgical suffix for excision (removal) is The surgical removal of a breast tumor (lump) without removing other tissue or lymph nodes is called a
lumpectomy	·
mast/o mastectomy simple, radical	15.109 There are two combining forms meaning breast: <i>mamm/o</i> and Formed from the latter, the term for surgical removal of a breast is There are several different types of mastectomies, depending on how much tissue is removed to ensure the cancer is excised. Removal of just the breast, leaving the underlying muscle and axillary lymph nodes intact, is called a mastectomy. A mastectomy involves the removal of the breast as well as the underlying chest
mastectomy	muscles and the axillary lymph nodes. A modified radical removes the breast and lymph nodes only.
-plasty mamm/o mammoplasty	15.110 Recall that the suffix for surgical reconstruction is The two combining forms meaning breast are and <i>mast/o</i> . Using the first of these, the term for surgical reconstruction of the breast is
augmentation reduction mammoplasty	15.111 A mammoplasty performed to enlarge the breast, usually by inserting an implant, is called mammoplasty. A reconstruction performed to remove excessive breast tissue and, thereby, reduce the size of the breasts is called a
mast/o fixation mastopexy	15.112 In addition to <i>mamm/o</i> , the other combining form for breast is The surgical suffix <i>-pexy</i> means suspension or The procedure to elevate pendulous breast tissue by fixing tissues higher is called a



Self-Instruction: Gynecologic Therapeutic Terms

Study the following:

TERM	MEANING
chemotherapy kem-ō-thār'ă-pē	treatment of malignancies, infections, and other diseases with chemical agents that destroy selected cells or impair their ability to reproduce

TERM	MEANING
radiation therapy rā-dē-ā'shŭn thār'ă-pē	treatment of neoplastic disease using radiation to deter the proliferation of malignant cells
hormone replacement therapy (HRT) hōr'mōn rē-plās'ment thār'ă-pē	use of a hormone (e.g., estrogen or progesterone) to replace a deficiency or to regulate production
hormonal contraceptives hōr-mōn'ăl kon-tră-sep'tivz	hormones used to prevent conception by suppressing ovulation
oral contraceptive pill (OCP) ōr'ăl kon-tră-sep'tiv pil	birth control pill
contraceptive injection kon-tră-sep'tiv in-jek'shŭn	injection of a contraceptive hormone (e.g., Depo-Provera) into the body
contraceptive implant kon-tră-sep'tiv im'plant	insertion of a contraceptive capsule under the skin to provide a continual infusion over an extended period
barrier contraceptives ba'rē-ĕr kon-tră-sep'tivz	products that provide a physical barrier to prevent conception (e.g., condoms or diaphragms)
intrauterine device (IUD) in'tră-yū'tĕr-in dē-vīs	contraceptive device inserted into the uterus that prevents implantation of a fertilized egg
spermicidals spër-mi-sī'dălz	creams, jellies, lotions, or foams containing agents that kill sperm (<i>cid/o</i> = to kill)



Programmed Review: Gynecologic Therapeutic Terms

ANSWERS	REVIEW
	15.113 The combining form referring to chemical agents is <i>chem/o</i> . The treatment of malignancies, infections, and other diseases with
	chemical agents that destroy targeted cells is called
chemotherapy	·
	15.114 Some kinds of cancer are treated with radiation, which
	deters the proliferation of malignant cells. This is called
radiation therapy	·
	15.115 If a woman is deficient in the production of a hormone,
	such as estrogen, treatment may involve administering a replacement
hormone	hormone to the person. This is called
replacement	therapy (HRT).
	15.116 Hormones administered to prevent conception and
contraceptives	pregnancy are called hormonal The
against	prefix contra- means or opposed to.

ANSWERS	REVIEW
contraceptive	Oral pills are generally called birth control
	pills. A hormonal contraceptive that is injected is called a
contraceptive	injection. Hormonal contraceptives also can
	be administered in a capsule that is placed under the skin to give a
implant	continual infusion; this is called a contraceptive
	15.117 Contraceptive methods that create a physical block to
barrier	prevent sperm from reaching the ovum are called
	contraceptives (e.g., a condom or a diaphragm).
intrauterine	15.118 IUD is the abbreviation for device,
	which is inserted into the uterus to prevent implantation of a fertilized
within	egg. The prefix <i>intra-</i> means
	15.119 Contraceptive creams, jellies, lotions, and foams that
	contain an agent that kills (cid/o means to kill) sperm are called
spermicidals	·



Self-Instruction: Obstetric Symptomatic Terms

Study the following:

TERM	MEANING
gravida (Fig. 15-19) grav'i-dă	a pregnant woman; gravida followed by a number indicates the number of pregnancies
nulligravida nŭl-i-grav'i-dă	having never been pregnant
primigravida prī-mi-grav'i-dă	first pregnancy
para (see Fig. 15-19) par'ă	to bear; a woman who has produced one or more viable (live outside the uterus) offspring; para followed by a number indicates the number of times a pregnancy has resulted in a single or multiple birth
nullipara nŭ-lip'ă-ră	a woman who has not borne a child (<i>nulli</i> = none; <i>para</i> = to bear)
primipara prī-mip'ă-ră	first delivery (<i>primi</i> = first; <i>para</i> = to bear)
multipara mŭl-tip'ă-ră	a woman who has given birth to two or more children (multi = many; para = to bear)
cervical effacement sĕr'vi-kăl ē-fās'ment	progressive obliteration of the endocervical canal during delivery



The following abbreviations are used in recording an obstetrical history.

GPA terms:

G gravida number of pregnancies

para number of viable birth experiences (may include multiple births)

AB abortus abortions

SAB spontaneous abortion TAB therapeutic abortion

Arabic numerals are placed after each abbreviation to indicate the number of pregnancies, viable births, or abortions.

Example:

Obstetric history: G2, P1, AB1 or gravida 2, para 1, abortus 1. The patient has been pregnant twice, had one birth experience that resulted in the delivery of at least one viable offspring, and had one abortion.]

TPAL terms:

- T term infants
- Ρ premature infants
- Α abortions
- living children

Example:

Obstetric history: 5 term infants, 0 premature infants, 0 abortions, 5 living children or Obstetric history: 5-0-0-5.

[The patient has delivered five term infants, no premature infants, no abortions and has five living children.]

Occasionally, combined GPA and TPAL abbreviations are used. For example:

Obstetrical history: gravida 3, 4-0-0-4

[The patient has been pregnant three times, had four term infants, no premature infants, no abortions, and has 4 living children. (Numbers indicate one twin birth.)

FIGURE 15-19 Obstetric history abbreviations.

TERM	MEANING
estimated date of confinement (EDC) ĕs-ti-mā'ted dāt of kon-fīn'ment estimated date of delivery (EDD) ĕs-ti-mā'tĕd dāt of dē-liv'ĕr-ē	expected date for delivery of the baby; normally 280 days or 40 weeks from last menstrual period (LMP)
meconium staining mē-kō'nē-ŭm stān'ing	presence of meconium in amniotic fluid

TERM	MEANING
ruptured membranes rŭp'chūrd mem'brānz	rupture of the amniotic sac, usually at onset of labor
macrosomia mak-rō-sō'mē-ă	large-bodied baby commonly seen in diabetic pregnancies (macro = large; soma = body)
polyhydramnios pol'ē-hī-dram'nē-os	excessive amniotic fluid

Programmed Review: Obstetric Symptomatic Terms

ANSWERS	REVIEW
pregnant	15.120 The obstetric term gravida refers to a woman. The term for a woman who has never been pregnant is
nulli	gravida, and the term for a woman in her first pregnancy
primigravida, first	is a The prefix <i>primi-</i> means
	15.121 Similarly, there are several obstetric terms for women
para	who have borne children, based on the term, which
no	means to bear. A nullipara is a woman who has borne
primipara	children. A woman who has given birth once is
	A woman who has borne multiple (two or more) children is
multipara, multiple or many	The prefix <i>multi</i> - means
	15.122 A pregnant woman is given an expected due date by
	her obstetrician. In medical language, this date is referred to by
estimated date	two expressions: the of
confinement, estimated	(EDC), or the
date, delivery	of (EDD). This calculation is
last	based on the date of the LMP, which stands for
menstrual period	·
	15.123 Problems may occur with the amniotic fluid or sac.
	Recall that the amniotic sac surrounds the embryo and fetus in
uterus	the woman's The term for the condition of
	excessive amniotic fluid begins with the prefix <i>poly-</i> , which means
many	or much, and uses the combining form hydr/o, meaning
polyhydramnios	water or fluid. This condition is called
	15.124 When the membranes of the amniotic sac break,
ruptured	usually during labor, this is called membranes.

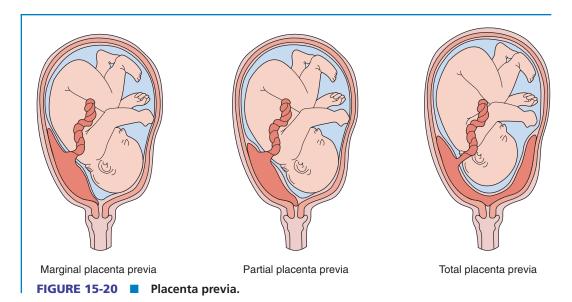
ANSWERS	REVIEW
	15.125 Recall that the term for intestinal discharges of the
meconium	fetus is The presence of meconium in
staining	the amniotic fluid is called meconium
effacement	15.126 As labor progresses and approaches delivery, the endocervical canal is progressively obliterated in a process known as cervical
large macrosomia	15.127 Recall that the prefix <i>macro-</i> means or long. The term for a large-bodied baby, often occurring in diabetic mothers, is



Self-Instruction: Obstetric Diagnostic Terms

Study the following:

TERM	MEANING
abortion (AB) ă-bōr'shŭn	expulsion of the products of conception before the fetus is viable (able to live outside the uterus)
spontaneous abortion (SAB) spon-tā'nē-yŭs ă-bōr'shŭn	miscarriage; naturally occurring expulsion of the products of conception
habitual abortion hă-bi'chū-ăl ă-bōr'shŭn	spontaneous abortion occurring in three or more consecutive pregnancies
incomplete abortion in-kom-plēt' ă-bōr'shŭn	incomplete expulsion of the products of conception
missed abortion mist ă-bōr'shŭn	death of a fetus or embryo within the uterus that is not naturally expelled after death
threatened abortion thrë'tend ă-bōr'shŭn	bleeding with the threat of miscarriage
cephalopelvic disproportion (CPD) sef'ă-lō-pel'vik dis-prō-pōr'shŭn	condition preventing normal delivery through the birth canal; either the baby's head is too large or the birth canal is too small
eclampsia ek-lamp'sē-ă	true toxemia of pregnancy characterized by high blood pressure, albuminuria, edema of the legs and feet, severe headaches, dizziness, convulsions, and coma
preeclampsia prē-ē-klamp'sē-ă pregnancy-induced hypertension (PIH) preg-nan'sē-in-dūsd hī'per-ten'shŭn	toxemia of pregnancy characterized by high blood pressure, albuminuria, edema of the legs and feet, and puffiness of the face, without convulsion or coma
ectopic pregnancy ek-top'ik preg'năn-sē	implantation of the fertilized egg outside the uterine cavity, often in the tube or ovary, or, rarely, in the abdominal cavity



TERM	MEANING
erythroblastosis fetalis ĕ-rith'rō-blas-tō'sis fē-tā'lis	disorder that results from the incompatibility of a fetus with an Rh-positive blood factor and a mother with an Rh-negative blood factor, causing red blood cell destruction in the fetus; this condition necessitates a blood transfusion to save the fetus
Rh factor r-āch fak'tŏr	presence, or lack, of antigens on the surface of red blood cells that may cause a reaction between the blood of the mother and the fetus, resulting in fetal anemia, which causes erythroblastosis fetalis
Rh positive r-āch poz'i-tiv	presence of antigens
Rh negative r-āch neg'ă-tiv	absence of antigens
hyperemesis gravidarum hī'pĕr-ē-mē'sis grah-vē-dar'ūm	severe nausea and vomiting in pregnancy that can cause severe dehydration in the mother and fetus (<i>emesis</i> = vomit)
meconium aspiration mē-kō'nē-ŭm as-pi-rā'shŭn	fetal aspiration of amniotic fluid containing meconium
placenta previa (Fig. 15-20) plă-sen'tă prē'vē-ă	displaced attachment of the placenta in the lower region of the uterine cavity
abruptio placentae ab-rŭp'shē-ō pla-sen'tē	premature detachment of a normally situated placenta



Programmed Review: Obstetric Diagnostic Terms

ANSWERS	REVIEW
abortion	15.128 The expulsion of the products of conception before fetal viability is called An abortion can occur naturally or therapeutically. A miscarriage, in which the

ANSWERS	REVIEW
spontaneous	expulsion occurs naturally, is called a abortion (SAB). Spontaneous abortions occurring in three or more
habitual	consecutive pregnancies are called abortion.
incomplete missed threatened	15.129 If the products of conception are not completely expelled, this is called an abortion. If the embryo or fetus dies within the uterus but is not then naturally expelled, this is called a abortion. Bleeding with the threat of miscarriage is called a abortion.
ectopic pregnancy	15.130 The term ectopic comes from a Greek word meaning out of place. A pregnancy in which the fertilized egg is implanted outside the uterus, such as in the fallopian tube, is called an
excessive hyperemesis gravidarum	15.131 Many women normally experience "morning sickness" early in pregnancy, but severe nausea and vomiting can cause dehydration. The word emesis means vomit. Recall that the prefix <i>hyper-</i> means above or The term for the condition of severe nausea and vomiting in pregnancy is
high before preeclampsia pregnancy-induced excessive	15.132 A serious condition that can occur in pregnancy, eclampsia is characterized by blood pressure and other symptoms, leading to convulsions or coma. Recall that the prefix <i>pre-</i> means A condition of high blood pressure similar to eclampsia, but occurring without convulsions or coma, may precede eclampsia. It is called, or hypertension (PIH). The prefix <i>hyper-</i> means or above.
Rh positive Rh	15.133 Certain antigens may or may not be present on the surface of red blood cells; this is called the factor. The presence of antigens is designated as Rh, and the absence of these antigens is designated as negative.
	15.134 If the blood of the mother is Rh negative and the blood of the fetus is Rh positive, a reaction will occur that causes fetal red blood cell destruction. Red blood cells are also called

ANSWERS	REVIEW
condition erythroblastosis fetalis	erythroblasts. Recall that the suffix <i>-osis</i> means increase or The condition that results in the fetus from this incompatibility of Rh factors is called A blood transfusion is usually necessary to save the fetus.
before placenta previa	15.135 The term previa comes from a Latin word formed by the combination of <i>pre-</i> , meaning, and <i>-via</i> , meaning the way. If the placenta is attached in an abnormal position low in the uterus, it may obstruct the movement of the fetus out of the uterus at childbirth. This condition of a displaced placenta is called
abruptio placentae	15.136 An abruption is a tearing away or detachment. The premature detachment of a normally situated placenta is called
amniotic meconium aspiration	15.137 Recall that meconium staining refers to the presence of meconium in the fluid. If this occurs, the fetus may suck this into its lungs, a condition called
head cephalopelvic	15.138 Normally, the infant's head passes easily through the birth canal in the mother's pelvis. Recall that the combining form <i>cephal/o</i> means If the infant's head is too large or the mother's pelvis is too small, a condition of disproportion exists, complicating childbirth.



Self-Instruction: Obstetric Diagnostic Tests and Procedures

Study the following:

TEST OR PROCEDURE	EXPLANATION
chorionic villus sampling (CVS) (Fig. 15-21) kō-rē-on'ik vil'ŭs sam'pling	sampling of placental tissue for microscopic and chemical examination to detect fetal abnormalities
amniocentesis (see Fig. 15-21) am'nē-ō-sen-tē'sis	aspiration of a small amount of amniotic fluid for analysis of possible fetal abnormalities

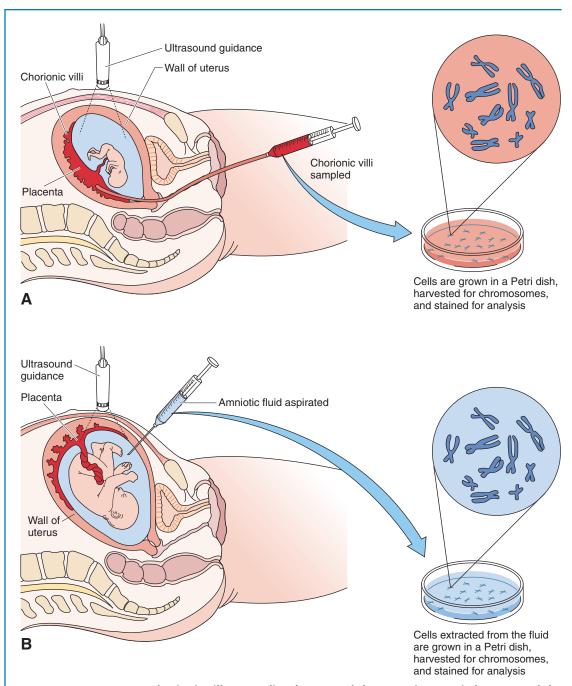


FIGURE 15-21 A. Chorionic villus sampling (9–11 weeks). B. Amniocentesis (15–18 weeks).

TEST OR PROCEDURE	EXPLANATION
fetal monitoring fē'tăl mon'i-tŏr-ing	use of an electronic device for simultaneous recording of fetal heart rate and uterine contractions
pel-vim'ĕ-trē	obstetric measurement of the pelvis to evaluate proper conditions for vaginal delivery
pregnancy test preg'nan-sē test	test performed on urine or blood to detect the presence of human chorionic gonadotropin hormone (secreted by the placenta), which indicates pregnancy

TEST OR PROCEDURE	EXPLANATION
pelvic sonography (see Fig. 15-13) pel'vik sŏ-nog'ră-fē	ultrasound imaging of the female pelvis
endovaginal sonogram en'dō-vaj'i-năl son'ō-gram transvaginal sonogram trans-vaj'i-năl son'ō-gram	ultrasound image of the uterus, tubes, and ovaries made after introduction of an ultrasonic transducer within the vagina; useful for detecting pathology (e.g., ectopic pregnancy or missed abortion)
obstetric sonogram (see Figs. 15-3 and 15-4) ob-stet'rik son'ō-gram	ultrasound image of the pregnant uterus to determine fetal development

Programmed Review: Obstetric Diagnostic Tests and Procedures

ANSWERS	REVIEW
aspiration amniocentesis	15.139 Various diagnostic tests are often performed during pregnancy. Recall that the suffix <i>-centesis</i> refers to puncture for Puncturing the amniotic sac and aspirating a small amount of amniotic fluid for analysis is called
chorionic villus	15.140 Another fetal sampling procedure is performed with placental tissue to detect fetal abnormalities. This is called sampling (CVS).
fetal monitoring	15.141 The fetal heart rate and uterine contractions can be monitored with an electronic recording device; this process is called
-metry pelvimetry	15.142 Recall that the suffix meaning process of measuring is Obstetric measuring of the pelvis for conditions related to vaginal delivery is called
pregnancy test	15.143 A woman who suspects that she may be pregnant can have a performed with a blood or urine sample to detect whether she is pregnant.
obstetric within endovaginal transvaginal	15.144 An ultrasound image of the pregnant uterus is called an sonogram. Recall that the prefix <i>endo-</i> means A sonogram made with the ultrasound transducer within the vagina is called an sonogram, or a sonogram (<i>trans</i> = through).



Self-Instruction: Obstetric Operative and Therapeutic Terms

Study the following:

TERM	MEANING		
OPERATIVE TERMS			
cesarean section (C-section) se-zā'rē-ăn sek'shŭn	surgical delivery of a baby via an incision through the abdomen and into the uterus		
dilation and evacuation (D&E) dī-lā'shŭn and ē-vak-yū-ā'shŭn	dilation of the cervix and removal of the products of conception; most commonly performed in the second trimester of pregnancy, after a missed abortion		
episiotomy e-piz-ē-ot'ō-mē	incision of the perineum to facilitate delivery of a baby		
THERAPEUTIC TERMS			
amnioinfusion am'nē-ō-in-fyū'zhun	introduction of a solution into the amniotic sac; an isotonic solution is most commonly used to relieve fetal distress		
therapeutic abortion (TAB) thār-ă-pyū'tik ă-bōr'shŭn	abortion induced by mechanical means or by drugs for medical reasons		
version ver'zhŭn	manual method for reversing the position of the fetus, usually done to facilitate delivery		
external version eks-tĕr'năl ver'zhŭn	abdominal manipulation		
internal version in-tĕr'năl ver'zhŭn	intravaginal manipulation		
Common Therapeutic Drug	Classifications		
abortifacient ă-bōr-ti-fā'shent	drug that causes abortion (e.g., mifepristone—formerly known as RU-486)		
oxytocin ok'sē-tō'sin	hormone secreted by the pituitary gland that causes myometrial contraction; used to induce labor		
Rh immune globulin r-āch i-myūn' glob'yū-lin	immunizing agent given to an Rh-negative mother within 72 hours after delivering an Rh-positive baby to suppress the Rh immune response		
tocolytic agent tō-kō-lit'ik ā'jent	drug used to stop labor contractions		



Programmed Review: Obstetric Operative and Therapeutic Terms

ANSWERS	REVIEW
	15.145 The delivery of an infant through a surgical incision is
	named for a famous Roman emperor who was reputedly delivered in
cesarean section	this manner: (C-section).

ANSWERS	REVIEW
episi/o, -tomy episiotomy	15.146 There are two combining forms for vulva: <i>vulv/o</i> and Recall that the suffix for incision is Made with the latter combining form, the term for the surgical incision of the perineum to facilitate delivery is
amnioinfusion	15.147 To infuse means to introduce a fluid into a body area. The introduction of a solution into the amniotic sac is called
abortion therapeutic abortion abortifacient	15.148 Again, the expulsion of the products of conception is called an When it is performed deliberately by mechanical or pharmacologic means, this is called a (TAB). A drug that causes abortion is called an
dilation evacuation remove missed	15.149 D&E is an abbreviation for and, a surgical procedure performed in the second trimester of pregnancy to dilate the cervix and evacuate (or) the products of conception. This is typically done in cases of abortion.
delivery external internal version	15.150 Manual manipulation to change the position of the fetus to facilitate is called version. This manipulation of the abdomen from the outside is called version. When performed from within the vagina, it is called
oxytocin	15.151 A hormone secreted by the pituitary gland causes uterine contractions. It is sometimes given to a pregnant woman to induce labor. This hormone is called
birth tocolytic	15.152 Recall that the combining form <i>toc/o</i> means The suffix <i>-lytic</i> can mean to stop something. A type of drug given to stop labor contractions is called a
immune globulin	15.153 An Rh-negative mother who delivers an Rh-positive baby may have an immune response. The agent given to the mother to suppress that response is called Rh

CHAPTER 15 ACRONYMS AND ABBREVIATIONS

ABBREVIATION	EXPANSION
AB	abortion
AIDS	acquired immunodeficiency syndrome
A&P	anterior and posterior
Bx	biopsy
CIN	cervical intraepithelial neoplasia
CIS	carcinoma in situ
CPD	cephalopelvic disproportion
C-section	cesarean section
CVS	chorionic villus sampling
D&C	dilation and curettage
D&E	dilation and evacuation
EDC	estimated date of confinement
EDD	estimated date of delivery
GYN	gynecology
HBV	hepatitis B virus
HIV	human immunodeficiency virus
HPV	human papilloma virus
HRT	hormone replacement therapy
HSV-2	herpes simplex virus type 2
IUD	intrauterine device
LEEP	loop electrosurgical excision procedure
LLETZ	large-loop excision of the transformation zone
LMP	last menstrual period
MRI	magnetic resonance imaging
OB	obstetrics
OCP	oral contraceptive pill
Pap	Papanicolaou (smear)
PID	pelvic inflammatory disease
PIH	pregnancy-induced hypertension
SAB	spontaneous abortion
STD	sexually transmitted disease
TAB	therapeutic abortion

CHAPTER 15 SUMMARY OF TERMS

The terms introduced in chapter 15 are listed below, followed by the page number on which each term can be found and its written pronunciation. For additional practice and reinforcement, write the definition of each term on a separate piece of paper.

abdominal hysterectomy/732

ab-dom'i-năl his-tĕr-ek'tŏ-mē

abortifacient/749

ă-bōr-ti-fā'shent

abortion (AB)/743

ă-bōr'shŭn

abruptio placentae/744

ab-rŭp'shē-ō pla-sen'tē

adenocarcinoma of the breast/723

ad'ĕ-nō-kar-si-nō'mă of the brest

adhesiolysis/731

ad-hēz-ē-ol'ĭ-sis

adhesiotomy/731

ad-hē-zē-ot'ŏ-mē

adnexa/707

ad-nek'să

amastia/723

ă-mas'tē-ă

amenorrhea/712

ă-men-ō-rē'ă

amniocentesis/746

am'nē-ō-sen-tē'sis

amnioinfusion/749

am'nē-ō-in-fyū'zhŭn

amnion/710

am'nē-on

amniotic fluid/710

am-nē-ot'ik flū'id

amniotic sac/710

am-nē-ot'ik sak

anovulation/713

an-ov-yū-lā'shŭn

anteflexion/714

. (1111

an-te-flek'shŭn

areola/709

ă-rē'ō-lă

aspiration biopsy/725

as-pi-rā'shŭn bī' op-sē

atrophic vaginitis/717

ă-trof'ik vaj-i-nī'tis

barrier contraceptives/739

bar'ē-ĕr kon-tră-sep'tivz

Bartholin glands/708

bahr'thō-lin glanz

bilateral salpingo-oophorectomy/733

bī-lat'ĕr-ăl sal-ping'gō-ō-of-ō-rek'tŏ-mē

biopsy (Bx)/725

bī'op-sē

carcinoma in situ (CIS) of the cervix/716

kar-si-nō'mă in sī'tū of the sĕr'viks

cephalopelvic disproportion

(CPD)/743

sef'ă-lō-pel'vik dis-prō-pōr'shŭn

cervical conization/731

sĕr'vi-kăl kō-nī-zā'shŭn

cervical dysplasia/716

sĕr'vi-kăl dis-plā'zē-ă

cervical effacement/740

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cervical os/707

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colporrhaphy/731

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kol-pōr'ă-fē an-tēr'ē-ōr rē-pār'

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dis-pa-rū'nē-ă

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pol'ē-hī-dram'nē-os polymastia/724 pol-ē-mas'tē-ă polythelia/724 pol-ē-thē'lē-ă

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Rh immune globulin/749 r-āch i-myūn' glob'yū-lin

Rh negative/744 r-āch neg'ă-tiv

Rh positive/744 r-āch pos'i-tiv

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vaj-i-nī'tis vaginosis/717 vaj'i-nō-sis

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vulva/708 vŭl'vă



PRACTICE EXERCISES

For each of the following words, write out the term components (prefixes [P], combining forms [CF], roots [R], and suffixes [S]) on the lines below the word. Then define the term according to the meaning of its components.

EXAMPLE

ectocervical

ecto / cervic / al P R S

DEFINITION: outside/cervix or neck/pertaining to

1.	vulvitis	/			
	R DEFINITION:	S	_		
2.	polymastia		1		
	P	R	_/S		
3.	ovoid	./			
		S			
4.	tocolysis	./	_		
	CF	S			
5.	salpingotom	y _/	_		
		S			
6.	mammoplas				
	CF				
7.	transvaginal				
	P DEFINITION:		S		

8.	hysterorrhexis			
	/_			
	CF	S		
	DEFINITION:			
9.	colposcopy			
	/_			
	CF	S		
	DEFINITION:			
10.	mammography			
	/_			
	CF			
	DEFINITION:			
11.	metrorrhagia			
	//			
	CF			
10	DEFINITION:			
12.	ovariocentesis			
	/_			
	CF DEFINITION:			
12	menarche			
10.	//			
	/ _ R			
	DEFINITION:			
14.	oophorectomy			
	/_			
	R			
	DEFINITION:			
15.	oligomenorrhe			
	/_			
	P	CF	S	
	DEFINITION:			
16.	dystocia			
	/_	/_		
	P	R	S	
	DEFINITION:			

760 MEDICAL TERMINOLOGY: A PROGRAMMED LEARNING APPROACH TO THE LANGUAGE OF HEALTH CARE

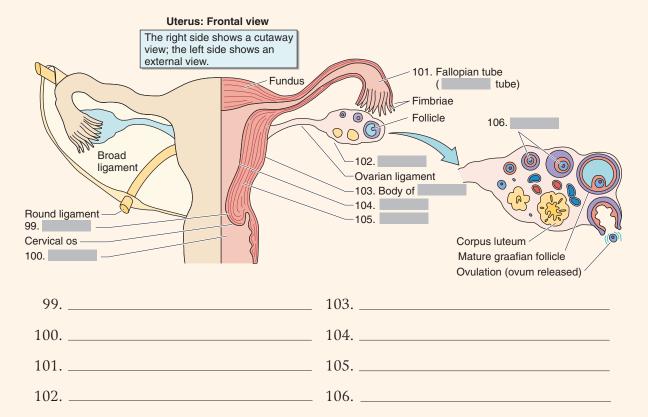
Writ	e out the expanded term for ea	ch abbreviation:		
26.	IUD			
27.	HPV			
28.	CVS			
29.	D&C			
30.	HBV			
31.	EDC			
32.	HSV			
33.	STD			
34.	TAB			
35.	HRT			
Writ	e the letter of the matching ter	m in the space provide	d:	
36.	removal of a uterine tube and a	an ovary		a. PID
37.	white vaginal discharge			b. chlamydia
38.	condition when baby's head is	too big for birth canal		c. colporrhaphy
39.	presence of more than one nip	ple on a breast		d. LEEP
40.	10. implantation of a fertilized egg outside the uterus			e. CPD
41.	most common bacterial STD is	n North America		f. leukorrhea
42.	excisional biopsy			g. polythelia
43.	painful intercourse			h. ectopic
44.	surgical repair of cystocele			i. salpingo-oophorectomy
45.	inflammation of entire female 1	pelvic cavity		j. dyspareunia
Writ	e the correct medical term for e	ach of the following d	efinitions	:
46.		condition of benign l menstrual cycle	umps in t	the breast that fluctuate with
47.		abnormal opening be	etween the	e bladder and vagina
48.		cutting and tying the	uterine to	ubes
49.		having more than two	o breasts	
50.		bacterial STD caused	l by a spir	ochete
51.		x-ray imaging of the	uterine tu	bes to determine patency
52.		study of cervical cells	to screer	n for cancer
53.		condition of migratio	on of endo	ometrial tissue
			etween the	e rectum and vagina
55.		surgical remedy for re	ectocele	

Com	plete each medical term by writing	the missing word or word part:
56.	pause = cessation	n of menstruation
57.	rrhea = painful menst	ruation
58.	rrhea = absence of me	enstruation
59.	rrhea = scanty menstr	ruation
60.	rrhagia = excessive blo	eeding at the time of menstruation
61.	rrhagia = bleeding fro menstrual period	m the uterus at any time other than during the normal
62.	mastia = development	t of mammary glands in a male
63.	mastia = absence of a	breast
64.	mastia = unusually sn mammoplasty	nall breasts; a common surgical remedy is
65.	mastia = unusually lar mammoplasty	rge breasts; a common surgical remedy is
66.	masto = surgical fixati	on of a pendulous breast
67.	ectomy = removal of a	a breast
68.	ectomy = removal of a	a breast lump
den	tify the following terms related to a	abortion:
69.	a natura	ally occurring miscarriage
		rriage occurring in three or more consecutive pregnancies
71.	fetal exp	pulsion with parts of the placenta remaining, with bleeding
72.	fetal de	ath within the uterus
73.	an abor	tion induced by mechanical means or by drugs
74.	bleedin	g with threat of miscarriage
Vrit	e the letter of the matching term in	the space provided:
75.	retroflexion	a. forward bending of the uterus
76.	condylomata	b. toxemia of pregnancy
77.	para 2	c. backward bending of the uterus
78.	prolapse	d. a pregnant woman
79.	cystocele	e. cancer
80.	gravida	f. genital warts
81.	rectocele	g. woman who has given birth twice
82.	eclampsia	h. first delivery
83.	CIN-2	i. protrusion of the rectum into the vagina
84.	primipara	j. descent of uterus from normal position
85.	anteflexion	k. dysplasia
86.	CIS	l. pouching of the bladder into the vagina

Circle the combining form that corresponds to the meaning given:

87. birth or labor	tox/o	toc/o	troph/o
88. vagina	uter/o	metr/o	colp/o
89. uterine tube	vagin/o	oophor/o	salping/o
90. menstruation	men/o	mamm/o	mast/o
91. cervix	colp/o	cervic/o	salping/o
92. egg	oophor/o	ov/i	ovari/o
93. vulva	episi/o	vagin/o	metr/o
94. uterus	vagin/o	metr/o	oophor/o
95. milk	lact/o	leuk/o	lip/o
96. ovary	ov/o	oophor/o	salping/o
97. breast	men/o	metr/o	mast/o
98. woman	gen/o	gynec/o	hyster/o

Identify the parts of the female reproductive anatomy by writing the missing words in the spaces provided:



Circle the correct spelling in each set of words:

107. gonorrhea	gonorhea	ghonarhea
108. dispareunia	dyspareunia	dysparunia
109. tokolytic	toecolytic	tocolytic
110. polythelia	polythellia	polytelia
111. meterorrhagia	metrorrhagia	metrorhagia
112. dialation	dyelayshun	dilation
113. salpingotomy	salpengotomy	salpigotomy
114. nulligravida	nuligravida	nulligraveda
115. meconeium	meconium	meconeum
116. macrosomia	macrosomnia	macrasomia
117. cureitage	curetage	curettage
118. eclampshea	eklampsia	eclampsia
119. menorrhea	amennorhea	amenorhea
120. abortifacient	abortafacient	abortofacent

Give the noun used to form each adjective:

121. chlamydial	
122. areolar	
123. syphilitic	
124. cervical	
125. dysplastic	
126. endometrial	



MEDICAL RECORD ANALYSIS

Medical Record 15-1

GYN CHART NOTE

- S: This 44 y.o. female, gravida 2, para 2, c/o extremely heavy periods for the past several years that have been getting worse for the past 2 months and have been accompanied by moderately severe cramps. Pap smears have been normal. She has no bladder or bowel complaints.
- O: On pelvic exam, the uterus is found to be retroverted and irregularly enlarged with several large fibroids palpable. There are no adnexal masses.
- A: Leiomyomata uteri with secondary menorrhagia
- P: Schedule vaginal hysterectomy; donate one pint of blood for autologous transfusion, if necessary

QUESTIONS ABOUT MEDICAL RECORD 15-1

- 1. What is the patient's OB history?
 - a. has never been pregnant
 - b. has been pregnant only once
 - c. has had two miscarriages
 - d. has been pregnant four times
 - e. has had two live births
- 2. Identify the patient's most significant symptom:
 - a. amenorrhea
 - b. dyspareunia
 - c. leukorrhea
 - d. menorrhagia
 - e. metrorrhagia
- 3. Which of the following was one of the objective findings?
 - a. tipped uterus
 - b. forward bending uterus
 - c. backward bending uterus
 - d. presence of several ovarian tumors
 - e. migration of portions of endometrial tissue
- 4. What was the condition of the patient's uterine tubes?
 - a. not stated
 - b. normal
 - c. inflamed
 - d. enlarged
 - e. had been removed previously

- 5. What was the diagnosis?
 - a. congenital tumor composed of displaced embryonic tissue
 - b. cyst of the uterine tube
 - c. inflammation of the organs of the pelvic
 - d. smooth muscle tumors in the uterus
 - e. ovarian tumors
- 6. What surgical procedure is planned?
 - a. incision into the uterine tube to remove the cyst
 - b. excision of the uterus
 - c. excision of the ovaries
 - d. dilation of the cervix and scraping of the endometrium
 - e. excision of the uterine tubes and both ovaries

Medical Record 15-2

FOR ADDITIONAL STUDY

Jane Foley has seen her gynecologist, Dr. Phyllis Widetick, yearly for a routine examination and Pap smear. Every year, the results have been normal. Jane is generally a healthy, active woman. This year, however, Dr. Widetick's examination and Pap smear found a problem. When the test results were in, Jane returned for additional testing. Medical Record 14-2 is the history and physical report dictated by Dr. Widetick after her examination.

Read Medical Record 15-2 (pages 768–769) for Ms. Foley, then write your answers to the following questions in the spaces provided.

QUESTIONS ABOUT MEDICAL RECORD 15-2

1.	In your own words, not using medical terminology, briefly describe the patient's chief complaint:				
2.	In your own words, not using medical terminology, briefly describe what a Pap smear is:				
2	Explain the regult of Mc Falay's Dan emean.				
٥.	Explain the result of Ms. Foley's Pap smear:				
4.	Because of this result, Dr. Widetick used colposcopy for further testing. Translate into non-medical language what she discovered with this diagnostic procedure:				
5.	What was the positive finding from the biopsy? Describe this in your own words:				
6.	Ms. Foley underwent the following procedures. Put these in the correct sequence by numbering them from 1 to 6 in the order they were performed:				
	follow-up examination				
	visualization with colposcope				
	ultrasound				

	Pap smear
	routine physical examination
	Bx
7.	The sonogram <i>definitely</i> showed what finding?
	What were the <i>possible</i> findings?
8.	In nonmedical language, define the two previous surgeries that Ms. Foley has had:
9.	How many children has Ms. Foley had?
0.	Mark any of the following abnormal findings from the present physical examination:
	a. enlarged uterus
	b. gross reflexes
	c. eroded cervix
	d. hypertension
	e. enlarged thyroid
	f. mobile right ovarian cyst
1.	Define Dr. Widetick's final diagnosis and explain what she will do next to treat Ms. Foley:

Medical Record 15-2: For Additional Study

CENTRAL MEDICAL CENTER

211 Medical Center Drive · Central City, US 90000-1234 · PHONE: (012) 125-6784 · FAX: (012) 125-9999

TO BE ADMITTED: 9/3/20xx

HISTORY

CHIEF COMPLAINT:

Right ovarian cyst.

HISTORY OF PRESENT ILLNESS:

This is a 32-year-old Caucasian female who had a routine examination on June 21, 20xx, at which time the examination revealed the right ovary to be approximately two to three times normal size. Otherwise, all was normal. The Papanicolaou smear revealed atypical cells of undetermined significance. The patient returned for a colposcopy, and this revealed what appeared to be squamous epithelial lesions CIN 1-2. Biopsies were performed which revealed chronic cervicitis and no evidence of CIN. The patient was placed on Lo-Ovral for two cycles and then was rechecked. The right ovary continued to enlarge and got to the point where it was approximately 4 x 5 cm, floating anteriorly in the pelvis, and was fairly firm to palpation. A pelvic sonogram corroborated the clinical findings in that superior to the right adnexa was a 4 x 5 cm mass, possibly with hemorrhage into either a paraovarian cyst or possibly a dermoid cyst. The patient is to be admitted now for an exploratory laparotomy.

PAST HISTORY:

There is no history of severe medical illnesses. The patient had the usual childhood diseases and has had good health as an adult.

PREVIOUS SURGERY: The patient had a hymenotomy and dilation and curettage in 20xx

MENSTRUAL HISTORY: Menstrual cycle is 30 days, averaging a four to seven day flow.

OBSTETRICAL HISTORY: The patient is a Gravida 0.

FAMILY HISTORY:

Diabetes in the family. Mother and father are living and well

REVIEW OF SYSTEMS:

Noncontributory.

(continued)

PW:bst

D: 9/1/20xx T: 9/2/20xx

PT. NAME:

FOLEY, JANE J.

ID NO:

IP-751014

331

ROOM NO: ATT. PHYS:

P. WIDETICK, M.D.

HISTORY AND PHYSICAL

Page 1

Medical Record 15-2: For Additional Study (Continued)

CENTRAL MEDICAL CENTER

211 Medical Center Drive • Central City, US 90000-1234 • PHONE: (012) 125-6784 • FAX: (012) 125-9999

PHYSICAL EXAMINATION

GENERAL:

The patient is a well-developed, well-nourished Caucasian female who is anxious but in no acute distress.

VITAL SIGNS:

HEIGHT: 5 feet 5 inches. WEIGHT: 154 pounds. BLOOD PRESSURE: 110/82.

HEENT:

Normal.

Supple; the trachea is in the midline. The thyroid is not enlarged.

CHEST:

LUNGS: Clear to percussion and auscultation. HEART: Regular sinus rhythm with no murmur. BREASTS: Normal to palpation.

ABDOMEN:

Soft and flat. No scars or masses.

PELVIC:

The outlet and vagina are normal. The cervix is moderately eroded. The uterus is normal size and anterior. The left adnexa is negative. The right adnexa has a firm, irregular cystic ovary that is anterior and approximately 5 x 5 cm. This is mobile and nontender.

EXTREMITIES:

Normal. Reflexes are grossly intact.

DIAGNOSIS:

Right ovarian cyst.

PLAN:

The patient is to be admitted for laparoscopy and probable ovarian cystectomy.

PW:bst

D: 9/1/20xx T: 9/2/20xx

PT. NAME:

FOLEY, JANE J.

ID NO:

IP-751014

331

ROOM NO:

ATT. PHYS:

P. WIDETICK, M.D.

HISTORY AND PHYSICAL PAGE 2

ANSWERS TO PRACTICE EXERCISES

- 1. vulv/itis R vulva (covering)/ inflammation
- 2. poly/mast/ia Р R S many/breast/condition of
- 3. ov/oid R S egg/resembling
- 4. toco/lysis CF birth or labor/breaking down or dissolution
- 5. salpingo/tomy CF uterine (fallopian) tube/incision
- 6. mammo/plasty CF breast/surgical repair or reconstruction
- 7. trans/vagin/al P S R across or through/vagina/ pertaining to
- 8. hystero/rrhexis CF uterus/rupture
- 9. colpo/scopy vagina/process of examination
- 10. mammo/graphy breast/process of recording
- 11. metro/rrhagia CF

uterus/to burst forth

12. ovario/centesis CF ovary/puncture for aspiration

- 13. men/arche menstruation/beginning
- ovary/excision (removal)

14. oophor/ectomy

- 15. oligo/meno/rrhea **CF** few or deficient/ menstruation/discharge
- 16. dys/toc/ia P R S painful, difficult, or faulty/labor or birth/condition of
- 17. gyneco/logist CF S woman/one who specializes in the study or treatment of
- 18. hystero/salpingo/gram CF uterus/uterine (fallopian) tube/record
- 19. episio/tomy CF vulva (covering)/incision
- 20. colpo/rrhaphy CF vagina/suture
- 21. hystero/spasm S **CF** uterus/involuntary contraction
- 22. lacto/rrhea CF milk/discharge
- 23. ovi/genesis CF
- egg/origin or production
- 24. endo/cervic/al R S within/cervix/ pertaining to

- 25. utero/tomy CF S uterus/incision
- 26. intrauterine device
- 27. human papilloma virus
- 28. chorionic villus sampling
- 29. dilation and curettage
- 30. hepatitis B virus
- 31. estimated date of confinement
- 32. herpes simplex virus
- 33. sexually transmitted dis-
- 34. therapeutic abortion
- 35. hormone replacement therapy
- 36. i
- 37. f
- 38. e
- 39. g
- 40. h
- 41. b
- 42. d
- 43. j
- 44. c
- 45. a
- 46. fibrocystic breasts
- 47. vesicovaginal fistula
- 48. tubal ligation
- 49. polymastia
- 50. syphilis
- 51. hysterosalpingogram
- 52. Papanicolaou (Pap) smear
- 53. endometriosis
- 54. rectovaginal fistula
- 55. colporrhaphy posterior repair
- 56. menopause
- 57. dysmenorrhea
- 58. amenorrhea
- 59. oligomenorrhea
- 60. menorrhagia
- 61. metrorrhagia
- 62. gynecomastia

63.	amastia	82.	b	105.	myometrium
64.	hypomastia or micro-	83.	k	106.	eggs or ova
	mastia; augmentation	84.	h	107.	gonorrhea
	mammoplasty	85.	a	108.	dyspareunia
65.	hypermastia or macro-	86.	e	109.	tocolytic
	mastia; reduction	87.	toc/o	110.	polythelia
	mammoplasty	88.	colp/o	111.	metrorrhagia
66.	mastopexy	89.	salping/o	112.	dilation
67.	mastectomy	90.	men/o	113.	salpingotomy
68.	lumpectomy	91.	cervic/o	114.	nulligravida
69.	spontaneous abortion	92.	ov/i	115.	meconium
70.	habitual abortion	93.	episi/o	116.	macrosomia
71.	incomplete abortion	94.	metr/o	117.	curettage
72.	missed abortion	95.	lact/o	118.	eclampsia
73.	therapeutic abortion	96.	oophor/o	119.	amenorrhea
74.	threatened abortion	97.	mast/o	120.	abortifacient
75.	С	98.	gynec/o	121.	chlamydia
76.	f	99.	cervix	122.	areola
77.	g	100.	vagina	123.	syphilis
78.	j	101.	uterine	124.	cervix
79.	1	102.	ovary	125.	dysplasia
80.	d		uterus	126.	endometrium
81.	i	104.	endometrium		

ANSWERS TO MEDICAL RECORD ANALYSIS

Medical Record 15-1: GYN Chart Note

1. e 2. d 3. a 4. b 5. d 6. b

Medical Record 15-2: For Additional Study

See CD-ROM for answers.



APPENDIX A



Glossary of Prefixes, Suffixes, and Combining Forms

TERM COMPONENT TO ENGLISH

TERM		TERM			
COMPONENT	MEANING	COMPONENT	MEANING		
a-	without	atri/o	atrium		
ab-	away from	audi/o	hearing		
abdomin/o	abdomen	aur/i	ear		
-ac	pertaining to	bacteri/o	bacteria		
acous/o	hearing	balan/o	glans penis		
acr/o	extremity or topmost	bi-	two or both		
-acusis	hearing condition	bil/i	bile		
ad-	to, toward, or near	-blast	germ or bud		
aden/o	gland	blast/o	germ or bud		
adip/o	fat	blephar/o	eyelid		
adren/o	adrenal gland	brachi/o	arm		
adrenal/o	adrenal gland	brady-	slow		
aer/o	air or gas	bronch/o	bronchus (airway)		
-al	pertaining to	bronchi/o	bronchus (airway)		
albumin/o	protein	bronchiol/o	bronchiole (little airway)		
-algia	pain	bucc/o	cheek		
alveol/o	alveolus (air sac)	capn/o	carbon dioxide		
ambi-	both	carb/o	carbon dioxide		
an-	without	carcin/o	cancer		
an/o	anus	cardi/o	heart		
andr/o	male	cata-	down		
angi/o	vessel	-cele	pouching or hernia		
ankyl/o	crooked or stiff	celi/o	abdomen		
ante-	before	-centesis	puncture for aspiration		
anti-	against or opposed to	cephal/o	head		
aort/o	aorta	cerebell/o	cerebellum (little brain)		
appendic/o	appendix	cerebr/o	cerebrum (largest part of brain)		
aque/o	water	cerumin/o	wax		
-ar	pertaining to	cervic/o	neck or cervix		
-arche	beginning	cheil/o	lip		
arteri/o	artery	chol/e	bile		
arthr/o	joint	chondr/o	cartilage (gristle)		
articul/o	joint	chrom/o	color		
-ary	pertaining to	chromat/o	color		
-ase	an enzyme	chyl/o	juice		
-asthenia	weakness	circum-	around		
ather/o	fatty paste	col/o	colon		
-ation	process	colon/o	colon		

TERM		TERM	
COMPONENT	MEANING	COMPONENT	MEANING
colp/o	vagina (sheath)	femor/o	femur
con-	together or with	fibr/o	fiber
conjunctiv/o	conjunctiva (to join together)	gangli/o	ganglion (knot)
contra-	against or opposed to	gastr/o	stomach
corne/o	cornea	-gen	origin or production
coron/o	circle or crown	gen/o	origin or production
cost/o	rib	-genesis	origin or production
crani/o crin/o	skull	gingiv/o gli/o	gum
cutane/o	to secrete skin	glomerul/o	glue
cyan/o	blue	gloss/o	glomerulus (small ball) tongue
cyst/o	bladder or sac	glott/o	opening
cyt/o	cell	gluc/o	sugar
dacry/o	tear	glyc/o	sugar
dactyl/o	digit (finger or toe)	gnos/o	knowing
de-	from, down, or not	-gram	record
dent/i	teeth	-graph	instrument for recording
derm/o	skin	-graphy	process of recording
dermat/o	skin	gynec/o	woman
-desis	binding	hem/o	blood
dextr/o	right or on the right side	hemat/o	blood
dia-	across or through	hemi-	half
diaphor/o	profuse sweating	hepat/o	liver
dips/o	thirst	hepatic/o	liver
dis-	separate from or apart	herni/o	hernia
doch/o	duct	hidr/o	sweat
duoden/o	duodenum	hist/o	tissue
-dynia	pain	histi/o	tissue
dys-	painful, difficult, or faulty	hormon/o	hormone (an urging on)
-e	noun marker	hydr/o	water
e-	out or away	hyper-	above or excessive
-eal	pertaining to	hypo-	below or deficient
ec-	out or away	hypn/o	sleep
-ectasis	expansion or dilation	hyster/o	uterus
ecto-	outside	-ia	condition of
-ectomy	excision (removal)	-iasis	formation of or presence of
-emesis	vomiting	-iatrics	treatment
-emia	blood condition	-iatry	treatment
en-	within	-ic	pertaining to
encephal/o	entire brain	-icle	small
endo-	within	ile/o	ileum
enter/o	small intestine	immun/o	safe
epi-	upon opididymic	infra-	below or under
epididym/o	epididymis	inguin/o inter-	groin between
episi/o erythr/o	vulva (covering) red	intra-	within
esophag/o	esophagus	ir/o	iris (colored circle)
esthesi/o	sensation	irid/o	iris (colored circle)
eu-	good or normal	-ism	condition of
ex-	out or away	iso-	equal or like
exo-	outside	-ist	one who specializes in
extra-	outside	-itis	inflammation
fasci/o	fascia (a band)	-ium	structure or tissue
1400110	ino ora (a carra)	10111	the acture of moduc

TERM		TERM	
TERM	MEANING	TERM	BAFABUNG
COMPONENT	MEANING	COMPONENT	MEANING
jejun/o	jejunum (empty)	narc/o	stupor or sleep
kerat/o	hard or cornea	nas/o	nose
ket/o	ketone bodies	nat/i	birth
keton/o	ketone bodies	necr/o	death
kinesi/o	movement	neo-	new
kyph/o	humped-back	nephr/o	kidney
lacrim/o	tear	neur/o	nerve
lact/o	milk	ocul/o	eye
lapar/o	abdomen	-oid	resembling
laryng/o	larynx (voice box)	-ole	small
lei/o	smooth	olig/o	few or deficient
-lepsy	seizure	-oma	tumor
leuc/o	white	onc/o	tumor or mass
leuk/o	white	onych/o	nail
lex/o	word or phrase	oophor/o	ovary
lingu/o	tongue fat	ophthalm/o	eye condition of vision
lip/o lith/o	stone	-opia opt/o	
lob/o	lobe (a portion)	orch/o	eye testis (testicle)
-logist	one who specializes in the	orchi/o	testis (testicle)
-logist	study or treatment of	orchid/o	testis (testicle)
-logy	study of treatment of	or/o	mouth
lord/o	bent	orth/o	straight, normal, or correct
lumb/o	loin (lower back)	-osis	condition or increase
lymph/o	clear fluid	oste/o	bone
-lysis	breaking down or dissolution	ot/o	ear
macro-	large or long	-ous	pertaining to
-malacia	softening	ovari/o	ovary
mamm/o	breast	ov/i	egg
-mania	abnormal impulse (attraction)	ov/o	egg
	toward	ox/o	oxygen
mast/o	breast	pachy-	thick
meat/o	opening	palat/o	palate
-megaly	enlargement	pan-	all
melan/o	black	pancreat/o	pancreas
men/o	menstruation	para-	alongside of or abnormal
mening/o	meninges (membrane)	-paresis	slight paralysis
meningi/o	meninges (membrane)	patell/o	knee cap
meso-	middle	path/o	disease
meta-	beyond, after, or change	pector/o	chest
-meter	instrument for measuring	ped/o	child or foot
metr/o	uterus	pelv/i	hip bone
-metry	process of measuring	-penia	abnormal reduction
micro-	small	per-	through or by
mono-	one	peri-	around
morph/o	form	perine/o	perineum
multi- muscul/o	many	peritone/o	peritoneum
	muscle muscle	-pexy	suspension or fixation
my/o		phac/o	lens (lentil) eat or swallow
myc/o myel/o	fungus bone marrow or spinal cord	phag/o phak/o	lens (lentil)
myos/o	muscle	pharyng/o	pharynx (throat)
myring/o	eardrum	phas/o	speech
,	COL OI WIII	P1140, C	of seem

TERM		TERM	
COMPONENT	MEANING	COMPONENT	MEANING
-phil	attraction for	scoli/o	twisted
-philia	attraction for	-scope	instrument for examination
phleb/o	vein	-scopy	process of examination
phob/o	exaggerated fear or sensitivity	seb/o	sebum (oil)
phon/o	voice or sound	semi-	half
phor/o	to carry or bear	sial/o	saliva
phot/o	light	sigmoid/o	sigmoid colon
phren/o	diaphragm or mind	sinistr/o	left or on the left side
plas/o	formation	sinus/o	hollow (cavity)
-plasia	formation	somat/o	body
-plasty	surgical repair or reconstruction	somn/o	sleep
-plegia	paralysis	somn/i	sleep
pleur/o	pleura	son/o	sound
-pnea	breathing	-spasm	involuntary contraction
pneum/o	air or lung	sperm/o	sperm (seed)
pneumon/o	air or lung	spermat/o	sperm (seed)
pod/o	foot	sphygm/o	pulse
-poiesis	formation	spin/o	spine (thorn)
poly-	many	spir/o	breathing
post-	after or behind	splen/o	spleen
pre-	before	spondyl/o	vertebra
presby/o	old age	squam/o	scale
pro-	before	-stasis	stop or stand
proct/o	anus and rectum	steat/o	fat
prostat/o	prostate	sten/o	narrow
psych/o	mind	stere/o	three-dimensional or solid
-ptosis	falling or downward	stern/o	sternum (breastbone)
•	displacement	steth/o	chest
pulmon/o	lung	stomat/o	mouth
purpur/o	purple	-stomy	creation of an opening
py/o	pus	sub-	below or under
pyel/o	basin	super-	above or excessive
pylor/o	pylorus (gatekeeper)	supra-	above or excessive
quadri-	four	sym-	together or with
radi/o	radius or radiation	syn-	together or with
	(especially x-ray)	tachy-	fast
re-	again or back	tax/o	order or coordination
rect/o	rectum	ten/o	tendon (to stretch)
ren/o	kidney	tend/o	tendon (to stretch)
reticul/o	a net "	tendin/o	tendon (to stretch)
retin/o	retina	test/o	testis (testicle)
retro-	backward or behind	thalam/o	thalamus (a room)
rhabd/o	rod shaped or striated (skeletal)	thorac/o	chest
rhin/o	nose	thromb/o	clot
-rrhage	to burst forth	thym/o	thymus gland or mind
-rrhagia	to burst forth	thyr/o	thyroid gland (shield)
-rrhaphy	suture	thyroid/o	thyroid gland (shield)
-rrhea	discharge	-tic	pertaining to
-rrhexis	rupture	toc/o	labor
salping/o	uterine (fallopian) tube or	tom/o	to cut
1 0	eustachian tube	-tomy	incision
sarc/o	flesh	ton/o	tone or tension
schiz/o	split or division	tonsill/o	tonsil
scler/o	hard or sclera	top/o	place
		- F	1

TERM COMPONENT	MEANING	TERM COMPONENT	MEANING
COMIT ONLINE	WEARING	COMIT ONLINE	MEANING
tox/o	poison	urin/o	urine
toxic/o	poison	uter/o	uterus
trache/o	trachea (windpipe)	uvul/o	uvula
trans-	across or through	vagin/o	vagina (sheath)
tri-	three	varic/o	swollen or twisted vein
trich/o	hair	vas/o	vessel
-tripsy	crushing	vascul/o	vessel
troph/o	nourishment or development	ven/o	vein
tympan/o	eardrum	ventricul/o	ventricle (belly or pouch)
-ula	small	vertebr/o	vertebra
-ule	small	vesic/o	bladder or sac
uln/o	ulna	vesicul/o	bladder or sac
ultra-	beyond or excessive	vitre/o	glassy
uni-	one	vulv/o	vulva (covering)
ur/o	urine	xanth/o	yellow
ureter/o	ureter	xer/o	dry
urethr/o	urethra	- y	condition or process of

ENGLISH TO TERM COMPONENT

MEANING	TERM COMPONENT	MEANING	TERM COMPONENT
abdomen abnormal abnormal reduction above across adrenal gland after again against air air sac airway all alongside of alveolus anus anus and rectum aorta apart appendix arm around artery atrium attraction for	abdomin/o, celi/o, lapar/o parapenia hyper-, super-, supra- dia-, trans- adrenal/o post-, meta- re- anti-, contra- aer/o, pneum/o, pneumon/o alveol/o bronch/o, bronchi/o pan- para- alveol/o an/o	bacteria basin before beginning behind below bent between beyond bile bile duct binding birth black bladder blood blood condition blue body bone bone marrow both brain	
away away from back backward	e-, ec-, ex- ab- re- retro-	breathing bronchus bud burst forth	-pnea, spir/o bronch/o, bronchi/o -blast, blast/o -rrhage, -rrhagia

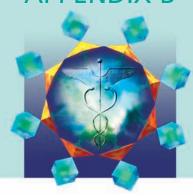
	TERM		TERM
MEANING	COMPONENT	MEANING	COMPONENT
calculus	lith/o	ear	aur/i, ot/o
cancer	carcin/o	eardrum	myring/o, tympan/o
carbon dioxide	capn/o, carb/o	eat or swallow	phag/o
carry	phor/o	egg	ov/i, ov/o
cartilage	chondr/o	enlargement	-megaly
cavity (sinus)	atri/o, sin/o	enzyme	-ase
cell	cyt/o	epididymis	epididym/o
cerebellum	cerebell/o	equal	iso-
cervix	cervic/o	esophagus	esophag/o
change	meta-	eustachian tube	salping/o
cheek	bucc/o	examination	-scopy
chest child	pector/o, steth/o, thorac/o	excessive excision	hyper-, super-, supra-, ultra-
circle	ped/o coron/o	(removal)	-ectomy
clear fluid	lymph/o	expansion or	-ectasis
clot	thromb/o	dilation	Cetasis
colon	col/o, colon/o	extremity	acr/o
colon, sigmoid	sigmoid/o	eye	ocul/o, ophthalm/o, opt/o
color	chrom/o, chromat/o	eyelid	blephar/o
colored circle	irid/o, ir/o	falling	-ptosis
condition	-osis	fallopian tube	salping/o
condition of	-ia, -ism, -ium, -y	fascia	fasci/o
contraction,	-spasm	fast	tachy-
involuntary	•	fat	adip/o, ather/o, lip/o, steat/o
coordination	tax/o	faulty	dys-
cornea	corne/o, kerat/o	fear, exaggerated	phob/o
correct	ortho-	femur	femor/o
creation of an	-stomy	few	olig/o
opening		fiber	fibr/o
crooked	ankyl/o	fixation	-pexy
crown	coron/o	flesh	sarc/o
crushing	-tripsy	foot	pod/o, ped/o
cut (to cut)	tom/o	form	morph/o
death deficient	necr/o	formation of	-plasia, plas/o, -poiesis -lasis
development	hypo-, olig/o troph/o	four	quadri-
diaphragm	phren/o	from	de-
different	hetero-	fungus	myc/o
difficult	dys-	ganglion	gangli/o
digit (finger	dactyl/o	gas	aer/o
or toe)		germ or bud	-blast, blast/o
dilation or	-ectasis	gland	aden/o
expansion		glans penis	balan/o
discharge	-rrhea	glassy	vitre/o
disease	path/o	glomerulus	glomerul/o
dissolution	-lysis	glue	gli/o
division	schiz/o	good	eu-
down	de-	groin	inguin/o
downward	-ptosis	gums	gingiv/o
placement		hair	trich/o
dry	xer/o	half	hemi-, semi-
duct duodenum	doch/o	hard	kerat/o, scler/o
auouenum	duoden/o	head	cephal/o

	TERM		TERM
MEANING	COMPONENT	MEANING	COMPONENT
hearing	acous/o, audi/o	narrow	sten/o
hearing condition		near	ad-
heart	cardi/o	neck	cervic/o
heat	therm/o	nerve	neur/o
hernia	-cele, herni/o	net	reticul/o
hip bone	pelv/i	new	neo-
hormone	hormon/o	normal	eu-, ortho-
humped-back	kyph/o	nose	nas/o, rhin/o
ileum	ile/o	not	de-
incision	-tomy	nourishment	troph/o
increase	-osis	oil	seb/o
inflammation	-itis	old age	presby-
instrument for	-scope	one	mono-
examination		one who	-ist
instrument for	-meter	specializes in	
measuring	1	one who	-logist
instrument for	-graph	specializes	
recording	• • /	in the study or	
jejunum (empty)	jejun/o	treatment of	alattle mastle
joint	arthr/o, articul/o	opening	glott/o, meat/o
juice ketone bodies	chyl/o ket/o, keton/o	opening, creation of	-stomy
kidney	nephr/o, ren/o	opposed to	anti-, contra-
kneecap	patell/o	order	tax/o
knowing	gnos/o	origin	gen/o, -gen, -genesis
labor	toc/o	out	e-, ec-, ex-
large	macro-	outside	ecto-, exo-, extra-
larynx	laryng/o	ovary	oophor/o, ovari/o
left or on the	sinistr/o	oxygen	ox/o
left side		pain	-algia, -dynia
lens	phac/o, phak/o	painful	dys-
light	phot/o	palate	palat/o
like	iso-	pancreas	pancreat/o
lip	cheil/o	paralysis	-plegia
liver	hepat/o, hepatic/o	paralysis, slight	-paresis
lobe	lob/o	perineum	perine/o
loin (lower back)	lumb/o	peritoneum	peritone/o
long	macro-	pertaining to	-ac, -al, -ar, -ary, -eal, -ic, -ous, -tic
lung	pneum/o, pneumon/o, pulmon/o	pharynx	pharyng/o
male	andr/o	place	top/o
many .	multi-, poly-	pleura	pleur/o
measuring,	-meter	poison	tox/o, toxic/o
instrument for		portion	lob/o
measuring,	motory	pouching	-cele
process of	-metry	presence of	-iasis
meninges menstruation	mening/o, meningi/o men/o	process of	-ation
milk	lact/o	process of production	-y gen/o, -gen, -genesis
mind	psych/o, phren/o, thym/o	prostate	prostat/o
mouth	or/o, stomat/o	protein	albumin/o
movement	kinesi/o	pulse	sphygm/o
muscle	muscul/o, my/o, myos/o	puncture for	-centesis
nail	onych/o	aspiration	
	J ===, =		

	TERM		TERM
MEANING	COMPONENT	MEANING	COMPONENT
purple	purpur/o	stiff	ankyl/o
pus	py/o	stomach	gastr/o
pylorus	pylor/o	stone	lith/o
radius	radi/o	stop or stand	-stasis
record	-gram	straight	orth/o
recording,	-graphy	striated	rhabd/o
process of	,	structure	-ium
rectum	proct/o, rect/o	study of	-logy
red	erythr/o	study of, one	-logist
resembling	-oid	who specializes	
reticulum	reticul/o	in the	,
retina	retin/o	stupor	narc/o
rib	cost/o	sugar	gluc/o, glyc/o, glycos/o
right or on the	dextr/o	surgical repair or	-plasty
right side		reconstruction	
rod shaped	rhabd/o	suspension	-pexy
rupture	-rrhexis	suture	-rrhaphy
sac	cyst/o, vesic/o, vesicul/o	swallow	phag/o
safe	immun/o	sweat	hidr/o
saliva	sial/o	sweat, profuse	diaphor/o
same	homo-	tear	dacry/o, lacrim/o
scale	squam/o	teeth	dent/i
sclera	scler/o	tendon	ten/o, tend/o, tendin/o
sebum	seb/o	tension	ton/o
secrete	crin/o	testis (testicle)	orch/o, orchi/o, orchid/o, test/o
seizure	-lepsy	thalamus	thalam/o
self	auto-	thick	pachy-
sensation	esthesi/o	thirst	dips/o
sensitivity,	phob/o	three	tri-
exaggerated	1:_	three-	stere/o
separate from	dis-	dimensional	
sigmoid colon	sigmoid/o	or solid	. 1
sinus	sinus/o	throat	pharyng/o
skeletal	rhabd/o	through	dia-, per-, trans-
skin skull	cutane/o, derm/o, dermat/o crani/o	thymus gland	thym/o
	hypn/o, somn/i, somn/o	thyroid gland tissue	thyr/o, thyroid/o hist/o, -ium
sleep slow	brady-	to or toward	ad-
small	-icle, micro-, -ole, -ula, -ule	together	con-, sym-, syn-
small intestine	enter/o	tone	ton/o
smooth	lei/o	tongue	gloss/o, lingu/o
softening	-malacia	tonsil	tonsill/o
sound	phon/o, son/o	topmost	acr/o
sheath	vagin/o	trachea	trache/o
specializes,	-ist	treatment	-iactrics, -iatry, -iatr/o
one who		treatment of,	-logist
speech	phas/o	one who	0
sperm	sperm/o, spermat/o	specializes	
spinal cord	myel/o	in the	
spine	spin/o	tumor	-oma, onc/o
spleen	splen/o	twisted	scoli/o
split	schiz/o	two	bi-
sternum	stern/o	ulna	uln/o

MEANING	TERM COMPONENT	MEANING	TERM COMPONENT
under upon ureter urethra urine uterine tube uterus vagina vein vein, swollen or twisted ventricle vertebra vessel vision, condition of	infra-, sub- epi- ureter/o urethr/o ur/o, urin/o salping/o hyster/o, metr/o, uter/o colp/o, vagin/o phleb/o, ven/o varic/o ventricul/o vertebr/o, spondyl/o angi/o, vas/o, vascul/o -opia	voice voice box vomiting vulva water wax weakness white windpipe with within without woman word, phrase yellow	phon/o laryng/o -emesis vulv/o, episi/o aque/o, hydr/o cerumin/o -asthenia leuc/o, leuk/o trache/o con-, sym-, syn- en-, endo-, intra- a-, an- gynec/o lex/o xanth/o

APPENDIX B



Abbreviations and Symbols

Abbreviations and symbols that appear in **red font** are considered "Dangerous Abbreviations" and should not be used.

ABBREVIATION OR SYMBOL	MEANING	ABBREVIATION OR SYMBOL	MEANING
ā	before	BAEP	brainstem auditory evoked
A	anterior; assessment		potential
A&P	auscultation and percussion	BAER	brainstem auditory evoked
A&W	alive and well		response
AB	abortion	BCC	basal cell carcinoma
ABG	arterial blood gas	BD	bipolar disorder
a.c.	before meals	b.i.d.	twice a day
ACE	angiotensin-converting enzyme	BKA	below-knee amputation
ACS	acute coronary syndrome	BM	bowel movement
ACTH	adrenocorticotropic hormone	BMP	basic metabolic panel
AD	right ear	BP	blood pressure
ad lib.	as desired	BPH	benign prostatic hypertrophy;
ADH	antidiuretic hormone		benign prostatic hyperplasia
ADHD	attention-deficit/hyperactivity	BRP	bathroom privileges
	disorder	BS	blood sugar
AIDS	acquired immunodeficiency	BUN	blood urea nitrogen
	syndrome	Bx	biopsy
AKA	above-knee amputation	ē	with
alb	albumin	C	Celsius; centigrade
ALS	amyotrophic lateral sclerosis	C&S	culture and sensitivity
ALT	alanine aminotransferase	CABG	coronary artery bypass graft
	(enzyme)	CAD	coronary artery disease
a.m.	morning	cap	capsule
amt	amount	CAT	computed axial tomography
ANS	autonomic nervous system	CBC	complete blood count
AP	anterior-posterior	cc	cubic centimeter
APKD	adult polycystic kidney disease	CC	chief complaint
aq	water	CCU	coronary (cardiac) care unit
AS	left ear	CF	cystic fibrosis
ASD	atrial septal defect	CHF	congestive heart failure
AST	aspartate aminotransferase (enzyme)	CIN	cervical intraepithelial neoplasia
AU	both ears	CIS	carcinoma in situ
AV	atrioventricular	cm	centimeter
$^{\circ}$	bilateral	CMP	comprehensive metabolic panel

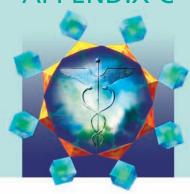
ABBREVIATION OR SYMBOL	MEANING	ABBREVIATION OR SYMBOL	MEANING
CNS	central nervous system	ESWL	extracorporeal shock wave
c/o	complains of	LOWL	lithotripsy
CO	cardiac output	ЕТОН	ethyl alcohol
CO_2	carbon dioxide	EUS	endoscopic ultrasonography
COPD	chronic obstructive pulmonary	F	Fahrenheit
	disease	FBS	fasting blood sugar
CP	cerebral palsy; chest pain	Fe	iron
CPAP	continuous positive airway	FH	family history
	pressure	fl oz	fluid ounce
CPD	cephalopelvic disproportion	FS	frozen section
CPR	cardiopulmonary resuscitation	FSH	follicle-stimulating hormone
CSF	cerebrospinal fluid	Fx	fracture
CSII	continuous subcutaneous	g	gram
	insulin infusion	GAD	generalized anxiety disorder
CT	computed tomography	GERD	gastroesophageal reflux disease
CTA	computed tomographic	GH	growth hormone
	angiography	GI	gastrointestinal
cu mm or mm ³	cubic millimeter	gm	gram
CVA	cerebrovascular accident	gr	grain
CVS	chorionic villus sampling	gt	drop
CXR	chest x-ray	gtt	drops
d	day	GTT	glucose tolerance test
D&C	dilation and curettage	GYN	gynecology
D&E	dilation and evacuation	h	hour
DC	discharge; discontinue; doctor	H&H	hemoglobin and hematocrit
	of chiropractic	H&P	history and physical
DDS	doctor of dental surgery	HAV	hepatitis A virus
DJD	degenerative joint disease	HBV	hepatitis B virus
DKA	diabetic ketoacidosis	HCT or Hct	hematocrit
DO	doctor of osteopathy	HCV	hepatitis C virus
DPM	doctor of podiatric medicine	HD	Huntington disease
dr DBE	dram	HEENT	head, eyes, ears, nose, and
DRE DTR	digital rectal exam	UCD on Uch	throat
DVT	deep tendon reflex deep vein thrombosis	HGB or Hgb HIV	hemoglobin human immunodeficiency
Dx		111 V	virus
ECG	diagnosis electrocardiogram	hpf	high-power field
echo	echocardiogram	HPI	history of present illness
ECT	electroconvulsive therapy	HPV	human papilloma virus
ECU	emergency care unit	HRT	hormone replacement
ED	erectile dysfunction		therapy
EDC	estimated date of confinement	h.s.	hour of sleep
EDD	estimated date of delivery	HSV-1	herpes simplex virus type 1
EEG	electroencephalogram	HSV-2	herpes simplex virus type 2
EGD	esophagogastroduodenoscopy	Ht	height
EKG	electrocardiogram	HTN	hypertension
EMG	electromyogram	Hx	history
ENT	ear, nose, and throat	I&D	incision and drainage
EPS	electrophysiological study	ICD	implantable cardioverter
ER	emergency room		defibrillator
ERCP	endoscopic retrograde	ICU	intensive care unit
	cholangiopancreatography	ID	intradermal
ESR	erythrocyte sedimentation rate	IM	intramuscular

ADDDEWIATION		ADDDEWIATION	
ABBREVIATION OR SYMBOL	MEANING	ABBREVIATION OR SYMBOL	MEANING
OK STIVIBUL	WEANING	OK STIVIBUL	MEANING
IMP	impression	MVP	mitral valve prolapse
IOL	intraocular lens	NAD	no acute distress
IP	inpatient	NCV	nerve conduction velocity
IUD	intrauterine device	NG	nasogastric
IV	intravenous	NK	natural killer (cell)
IVP	intravenous pyelogram	NKA	no known allergy
IVU	intravenous urogram	NKDA	no known drug allergy
JCAHO	Joint Commission on	noc.	night
	Accreditation of Healthcare	NPO	nothing by mouth
1	Organizations	NSAID	nonsteroidal antiinflammatory
kg KUB	kilogram	NICD	drug
L L	kidneys, ureters, bladder liter	NSR O	normal sinus rhythm
$^{\mathbb{C}}$	left		objective
L&W	living and well	O_2 OA	oxygen osteoarthritis
LASIK	laser-assisted in situ	OB	obstetrics
LHOIK	keratomileusis	OCD	obsessive-compulsive disorder
1b	pound	OCP	oral contraceptive pill
LEEP	loop electrosurgical excision	OD	right eye; doctor of optometry
	procedure	OH	occupational history
LH	luteinizing hormone	OP	outpatient
LLETZ	large-loop excision of	OR	operating room
	transformation zone	ORIF	open reduction, internal
LLQ	left lower quadrant		fixation
LP	lumbar puncture	OS	left eye
lpf	low-power field	OU	both eyes
LTB	laryngotracheobronchitis	oz	ounce
LUQ	left upper quadrant	р	after
m	meter	P	plan; posterior; pulse
$\mathbf{m}_{\underline{}}$	murmur	PA	posterior-anterior
MCH	mean corpuscular (cell)	PACU	postanesthetic care unit
1 rorro	hemoglobin	PaCO ₂	partial pressure of carbon
MCHC	mean corpuscular (cell)	D.O	dioxide
MON	hemoglobin concentration	PaO ₂	partial pressure of oxygen
MCV	mean corpuscular (cell)	Pap PAR	Papanicolaou (smear)
MD	volume		postanesthetic recovery after meals
MD	medical doctor; muscular	p.c. PCI	percutaneous coronary
mg	dystrophy milligram		intervention
MI	myocardial infarction	PD	panic disorder
ml or mL	milliliter	PDA	patent ductus arteriosus
mm	millimeter	PE	physical examination;
mm ³ or cu mm	cubic millimeter		pulmonary embolism;
MPI	myocardial perfusion image		polyethylene
MRA	magnetic resonance	PEFR	peak expiratory flow rate
	angiography	per	by or through
MRI	magnetic resonance imaging	PERRLA	pupils equal, round, and
MS	multiple sclerosis;		reactive to light and
	musculoskeletal		accommodation
MSH	melanocyte-stimulating	PET	positron-emission tomography
	hormone	PF	peak flow
MUGA	multiple-gated acquisition	PFT	pulmonary function testing
	(scan)	pН	potential of hydrogen

ABBREVIATION		ABBREVIATION	
OR SYMBOL	MEANING	OR SYMBOL	MEANING
PH	past history	š	without
PI	present illness	S	subjective
PID	pelvic inflammatory disease	SA	sinoatrial
PIH	pregnancy-induced	SAB	spontaneous abortion
	hypertension	SAD	seasonal affective disorder
p.m.	after noon	SC	subcutaneous
PLT	platelet	SCA	sudden cardiac arrest
PMH	past medical history	SCC	squamous cell carcinoma
PMN	polymorphonuclear (leukocyte)	SH	social history
PNS	peripheral nervous system	Sig:	instruction to patient
p.o.	by mouth	SLE	systemic lupus erythematosus
post-op or	postoperative	SOB	shortness of breath
postop	mantenan dial lala a di ayana	SPECT	single-photon emission
PPBS PR	postprandial blood sugar	SnGr	computed tomography specific gravity
pre-op or preop	per rectum	SpGr SQ	subcutaneous
p.r.n.	as needed	SR	systems review
PSA	prostate-specific antigen	SK SS	one-half
PSG	polysomnography	STAT	immediately
pt	patient	STD	sexually transmitted disease
PT	physical therapy; prothrombin	SUI	stress urinary incontinence
	time	suppos	suppository
PTCA	percutaneous transluminal	SV	stroke volume
	coronary angioplasty	Sx	symptom
PTH	parathyroid hormone	T	temperature
PTSD	posttraumatic stress disorder	T_3	triiodothyronine
PTT	partial thromboplastin time	T_4	thyroxine
PUD	peptic ulcer disease	T&A	tonsillectomy and
PV	per vagina	4.1.	adenoidectomy
PVC	premature ventricular	tab	tablet
Px	contraction	TAB TB	therapeutic abortion tuberculosis
	physical examination every	TEDS	thromboembolic disease
q q.d.	every day, daily	TLDU	stockings
qh	every hour	TEE	transesophageal
q2h	every 2 hours	122	echocardiogram
q.i.d.	four times a day	TIA	transient ischemic attack
q.o.d.	every other day	t.i.d.	three times a day
qt	quart	TM	tympanic membrane
R	respiration	TMR	transmyocardial
R	right		revascularization
RA	rheumatoid arthritis	tPA or TPA	tissue plasminogen activator
RBC	red blood cell; red blood count	Tr	treatment
RLQ	right lower quadrant	TSH	thyroid-stimulating hormone
R/O	rule out	TURP	transurethral resection of the
ROM	range of motion	/T7X /	prostate
ROS	review of symptoms	TV	tidal volume
RP	retrograde pyelogram	Tx	treatment; traction
RRR	regular rate and rhythm	UA	urinalysis
RTC RTO	return to clinic return to office	UCHD URI	usual childhood diseases
RUQ	right upper quadrant	US or U/S	upper respiratory infection ultrasound
Rx	recipe; prescription	UTI	urinary tract infection
144	recipe, prescription		armary tract infection

ABBREVIATION OR SYMBOL	MEANING	ABBREVIATION OR SYMBOL	MEANING
VC	vital capacity	#	number; pound
VCU or VCUG	voiding cystourethrogram	0	degree; hour
V/Q	ventilation/perfusion	\uparrow	increase; above
VS	vital signs	\downarrow	decrease; below
VSD	ventricular septal defect	✓	check
$\mathbf{V}_{_{\mathrm{T}}}$	tidal volume	θ	none; negative
w.a.	while awake	ρ	standing
WBC	white blood cell; white blood	9	sitting
	count	0-	lying
WDWN	well developed, well nourished	×	times; for
wk	week	>	greater than
WNL	within normal limits	<	less than
Wt	weight	†	one
X	times; for	ίť	two
x-ray	radiography	iii	three
y.o. or y/o	year old	iv	four
yr	year	I, II, III, IV, V,	uppercase Roman numerals
yr ♀	female	VI, VII, VIII,	1–10
δ	male	IX, and X	

APPENDIX C



Commonly Prescribed Drugs

The following alphabetical list of commonly prescribed drugs (trade and generic) is based on listings of prescriptions dispensed in the United States during 2005. The classification and major therapeutic uses for each are also provided. Trade drug names begin with a capital letter; the generic names accompany them in parentheses. All generic names are set in lowercase.

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
acetaminophen and codeine	nonsteroidal antiinflammatory drug (NSAID) (analgesic/antipyretic) and opiate (narcotic) combination	moderate to severe pain, fever
AcipHex (rabeprazole)	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)
Actonel (risedronate)	bisphosphonate (bone resorption inhibitor)	osteoporosis, Paget disease
Actos (pioglitazone)	oral antidiabetic	type 2 diabetes mellitus
acyclovir	antiviral	viral infections
Adderall XR (amphetamine mixed salts)	central nervous system (CNS) stimulant	attention-deficit/hyperactivity disorder (ADHD)
Advair Diskus (salmeterol and fluticasone)	β_2 -adrenergic agonist (bronchodilator) and glucocorticoid (antiinflammatory) combination	asthma
Abilify (aripiprazole)	antipsychotic	schizophrenia, bipolar disorder
albuterol aerosol	β ₂ -adrenergic agonist (bronchodilator)	asthma, bronchitis
Allegra (fexofenadine)	antihistamine	allergy
Allegra D (fexofenadine and pseudoephedrine)	antihistamine and decongestant combination	allergy with nasal congestion
allopurinol	xanthine oxidase inhibitor	gout
Alphagan P (brimonidine) ophthalmic solution	α_2 -adrenergic agonist (antihypertensive)	glaucoma
alprazolam	benzodiazepine (anxiolytic, sedative, hypnotic)	anxiety
Altace (ramipril)	angiotensin-converting enzyme (ACE) inhibitor	hypertension, congestive heart failure (CHF)
Amaryl (glimepiride)	oral antidiabetic	type 2 diabetes mellitus
Ambien (zolpidem)	sedative; hypnotic	insomnia
amitriptyline	antidepressant	depression
amoxicillin	penicillin (antibiotic)	bacterial infections

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
Aricept (donepezil)	acetylcholinesterase inhibitor	Alzheimer disease
atenolol	cardioselective β-blocker (antihypertensive, antiarrhythmic, antianginal)	hypertension, angina pectoris, cardiac arrhythmias
atenolol and chlorthalidone	cardioselective β-blocker (antihyper- tensive, antiarrhythmic, antianginal) and diuretic combination	hypertension
Augmentin (amoxicillin and clavulanate)	penicillin (antibiotic) and β -lactamase inhibitor combination	bacterial infections
Avalide (irbesartan and hydrochlorothiazide)	angiotensin-receptor blocker (antihy- pertensive) and diuretic combination	hypertension
Avandia (rosiglitazone)	oral antidiabetic	type 2 diabetes mellitus
Avapro (irbesartan)	angiotensin-receptor blocker (antihy- pertensive)	hypertension
Avelox (moxifloxacin)	fluoroquinolone (antibiotic)	bacterial infections
Aviane (levonorgestrel and ethinyl estradiol)	oral contraceptive	birth control
azithromycin	macrolide (antibiotic)	bacterial infections
baclofen	skeletal muscle relaxant	muscle spasms and spasticity
Bactroban (mupirocin)	topical antibiotic	bacterial skin infections
benazepril	angiotensin-converting enzyme (ACE) inhibitor	hypertension
Benicar (olmesartan medoxomil)	angiotensin-receptor blocker (antihy- pertensive)	hypertension
benzonatate	nonnarcotic antitussive	cough
Biaxin (clarithromycin)	macrolide (antibiotic)	bacterial infections
bupropion SR	atypical antidepressant	depression
buspirone	anxiolytic	anxiety
butalbital, acetaminophen, and caffeine	sedative barbiturate; analgesic/antipyretic; central nervous system (CNS) stimulant combination	muscle tension headache
carisoprodol	skeletal muscle relaxant	skeletal muscle spasms and spasticity
Cartia XT (diltiazem)	calcium-channel blocker	hypertension, angina pectoris, cardiac arrhythmias
Celebrex (celecoxib)	COX-2 inhibitor (nonsteroidal anti-inflammatory drug [NSAID])	pain, inflammation, fever, arthritis
cephalexin	cephalosporin (antibiotic)	bacterial infections
Cialis (tadalafil)	phosphodiesterase (type 5) enzyme inhibitor	erectile dysfunction (ED)
ciprofloxacin	fluoroquinolone (antibiotic)	bacterial infections
citalopram	selective serotonin reuptake inhibitor (SSRI) (antidepressant)	depression
Clarinex (desloratadine)	antihistamine	allergy
clindamycin	antibiotic	bacterial infections
clonazepam	benzodiazepine (sedative/hypnotic, anticonvulsant, anxiolytic)	epilepsy, seizures, anxiety (panic disorder)

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
clonidine	α_2 -adrenergic agonist (antihypertensive)	hypertension
clotrimazole and betamethasone	topical antifungal and glucocorticoid (steroid) combination	fungal infections, some parasites
Combivent (ipratropium and albuterol) inhalation aerosol	anticholinergic and β ₂ -adrenergic agonist combination (bronchodilators)	asthma, chronic bronchitis, emphysema
Concerta (methylphenidate) extended release	central nervous system (CNS) stimulant	attention-deficit/hyperactivity disorder (ADHD)
Coreg (carvedilol)	cardioselective β-blocker (antihypertensive, antiarrhythmic, antianginal)	hypertension, congestive heart failure (CHF)
Cosopt (dorzolamide hydrochloride and timolol maleate) ophthalmic solution	carbonic anhydrase inhibitor and β-blocker combination	intraocular pressure
Coumadin (warfarin sodium)	anticoagulant	thromboembolic disorders
Cozaar (losartan)	angiotensin-receptor blocker (antihypertensive)	hypertension
Crestor (rosuvastatin)	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia
cyclobenzaprine	skeletal muscle relaxant	skeletal muscle spasms and spasticity
Cymbalta (duloxetine hydrochloride)	selective serotonin and norepinephrine reuptake inhibitor (SSNRI)	major depression, diabetic peripheral neuropathic pain
Depakote (divalproex)	anticonvulsant	epilepsy, migraine prophylaxis, bipolar mania
Detrol LA (tolterodine)	anticholinergic	overactive bladder
diazepam	benzodiazepine (sedative/hypnotic, anticonvulsant, anxiolytic)	anxiety, skeletal muscle spasm, epilepsy, seizures
diclofenac	nonsteroidal antiinflammatory (NSAID)	pain, inflammation, fever
Digitek (digoxin)	cardiac glycoside	congestive heart failure (CHF), cardiac tachyarrhythmias
digoxin	cardiac glycoside	congestive heart failure (CHF), cardiac tachyarrhythmias
Dilantin (phenytoin)	hydantoin (anticonvulsant)	epilepsy, seizures
diltiazem	calcium-channel blocker	hypertension, angina pectoris, cardiac arrhythmias
Diovan (valsartan)	angiotensin-receptor blocker (antihypertensive)	hypertension
Diovan HCT (valsartan and hydrochlorothiazide)	angiotensin-receptor blocker and diuretic combination (antihypertensive)	hypertension
Ditropan XL (oxybutynin)	anticholinergic (urinary antispasmodic)	overactive bladder
doxazosin	α_1 -adrenergic antagonist (antihypertensive, vasodilator)	benign prostatic hyperplasia (BPH), hypertension
doxycycline	tetracycline (antibiotic)	bacterial, rickettsial, chlamydial infections

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
Effexor XR (venlafaxine)	antidepressant	depression
Elidel (pimecrolimus) topical cream	immunosuppressant agent	atopic dermatitis
enalapril	angiotensin-converting enzyme (ACE) inhibitor	hypertension, congestive heart failure (CHF)
Endocet (oxycodone and acetaminophen)	opiate (narcotic) and nonsteroidal antiinflammatory (NSAID) (analgesic/antipyretic) combination	moderate to severe pain
estradiol	estrogen	contraception, menstrual irreg- ularity, hormone replacement, vaginal atrophy
etodolac	nonsteroidal antiinflammatory drug (NSAID) (analgesic/antipyretic)	pain, inflammation, fever, arthritis
Evista (raloxifene)	selective estrogen-receptor modulator (SERM)	prevention and treatment of osteoporosis
famotidine	H ₂ receptor antagonist	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)
fexofenadine	antihistamine	allergy
Flexeril (cyclobenzaprine)	skeletal muscle relaxant	skeletal muscle spasms and spasticity
Flomax (tamsulosin)	α_1 -adrenergic antagonist (antihypertensive, vasodilator)	benign prostatic hypertrophy (BPH)
Flonase (fluticasone) nasal spray	glucocorticoid (antiinflammatory, immunosuppressant)	allergic rhinitis
Flovent (fluticasone) oral inhalation	glucocorticoid (antiinflammatory, immunosuppressant)	asthma control
fluconazole	antifungal	fungal infections
fluoxetine	selective serotonin reuptake inhibitor (SSRI) (antidepressant)	depression
folic acid	vitamin	nutritional supplement
Fosamax (alendronate)	bisphosphonate (bone resorption inhibitor)	osteoporosis, Paget disease
fosinopril	angiotensin-converting enzyme (ACE) inhibitor	hypertension
furosemide	diuretic	hypertension, edema associated with congestive heart failure (CHF) or renal disease
gabapentin	anticonvulsant	postherpetic neuralgia, epilepsy (partial seizures)
gemfibrozil	antihyperlipidemic	hypertriglyceridemia, hyperlipidemia
glipizide	oral antidiabetic	type 2 diabetes mellitus
glyburide	oral antidiabetic	type 2 diabetes mellitus
glyburide and metformin	oral antidiabetic (combination product)	type 2 diabetes mellitus
GlycoLax (polyethylene glycol)	laxative	constipation

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
Humalog (insulin lispro)	insulin; antidiabetic	types 1 and 2 diabetes mellitus
Humulin (insulin	insulin; antidiabetic	types 1 and 2 diabetes mellitus
preparation)		· ·
hydrochlorothiazide	diuretic	hypertension, edema associated with congestive heart failure (CHF) or renal disease
hydrochlorothiazide and bisoprolol	diuretic and cardioselective β-blocker combination (antihypertensive)	hypertension
hydrochlorothiazide and triamterene	potassium-sparing diuretic combination	hypertension, edema in congestive heart failure (CHF)
hydrocodone and aceta- minophen	opiate (narcotic) and nonsteroidal antiinflammatory (NSAID) (anal- gesic/antipyretic) combination	moderate to severe pain
hydroxyzine	antihistamine	allergy, insomnia
Hyzaar (losartan and hydrochlorothiazide)	angiotensin-receptor blocker and diuretic combination (antihypertensive)	hypertension
ibuprofen	analgesic; nonsteroidal antiinflammatory (NSAID)	pain, inflammation, fever
Imitrex (sumatriptan succinate)	triptan (antimigraine agent)	migraine headache
isosorbide mononitrate	coronary vasodilator (antianginal)	angina pectoris
Klor-Con (potassium chloride)	potassium salt; electrolyte supplement	potassium deficiency
Lamictal (lamotrigine)	anticonvulsant	epilepsy, seizures
Lanoxin (digoxin)	cardiac glycoside	congestive heart failure (CHF), cardiac tachyarrhythmias
Lantus (insulin glargine)	insulin; antidiabetic	types 1 and 2 diabetes mellitus
Lescol XL (fluvastatin)	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia
Levaquin (levofloxacin)	fluoroquinolone (antibiotic)	bacterial infections
Levitra (vardenafil)	phosphodiesterase (type 5) enzyme inhibitor	erectile dysfunction (ED)
levothyroxine	thyroid hormone	hypothyroidism
Levoxyl (levothyroxine sodium)	thyroid hormone	hypothyroidism
Lexapro (escitalopram)	selective serotonin reuptake inhibitor (SSRI) (antidepressant)	depression
Lidoderm (lidocaine) patch	local anesthetic	postherpetic neuralgia
Lipitor (atorvastatin)	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia
lisinopril	angiotensin-converting enzyme (ACE) inhibitor	hypertension
lisinopril and hydrochlorothiazide	angiotensin-converting enzyme (ACE) inhibitor and diuretic combination	hypertension
lithium	antimanic	manic episodes of bipolar disorder

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
lorazepam	benzodiazepine (sedative/hypnotic, anticonvulsant, anxiolytic)	anxiety, preoperative sedation, epilepsy, seizures
Lotrel (amlodipine and benazepril)	calcium-channel blocker and angiotensin-converting enzyme (ACE) inhibitor combination	hypertension
lovastatin	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia
Lunesta (eszopiclone)	hypnotic	insomnia
Macrobid (nitrofurantoin)	antibiotic	bacterial infections of urinary tract
meclizine	anticholinergic	motion sickness, vertigo
metformin	oral antidiabetic	type 2 diabetes mellitus
methotrexate	antineoplastic	neoplastic and immunological disorders
methylprednisolone	glucocorticoid (antiinflammatory, immunosuppressant)	inflammation, immunological disorders, allergies
metoclopramide	prokinetic; antiemetic	gastroesophageal reflux disease (GERD), gastroparesis, nausea, vomiting
metoprolol	cardioselective β-blocker (antihypertensive, antiarrhythmic, antianginal)	hypertension, angina pectoris
metronidazole	antibacterial, antiprotozoal	bacterial infections, protozoal infections
Miacalcin (calcitonin)	hormone	osteoporosis, Paget disease
minocycline	antibiotic	bacterial infections
mirtazapine	atypical antidepressant	depression
Mobic (meloxicam)	nonsteroidal antiinflammatory drug (NSAID)	osteoarthritis
morphine	opiate agonist	pain
mupirocin	topical antibiotic	bacterial skin infections
nabumetone	nonsteroidal antiinflammatory drug (NSAID)	pain, inflammation, fever
naproxen	nonsteroidal antiinflammatory drug (NSAID)	pain, inflammation, fever
Nasacort (triamcinolone) AQ topical nasal spray	glucocorticoid (antiinflammatory, immunosuppressant)	allergic rhinitis
Nasonex (mometasone) topical nasal spray	glucocorticoid (antiinflammatory, immunosuppressant)	allergic rhinitis
Nexium (esomeprazole)	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)
Niaspan (niacin)	vitamin	dyslipidemia
nifedipine	calcium-channel blocker	hypertension, angina pectoris
nitrofurantoin	antibiotic	bacterial infections of urinary tract
NitroQuick (nitroglycerin)	antianginal	coronary vasodilator
nortriptyline	tricyclic antidepressant	depression

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES	
Norvasc (amlodipine)	calcium-channel blocker	hypertension, angina pectoris	
nystatin	antifungal	fungus	
omeprazole	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)	
Omnicef (cefdinir)	cephalosporin (antibiotic)	bacterial infections	
Ortho Evra (norelgestromin and ethinyl estradiol)	contraceptive patch	birth control	
Ortho Tri-Cyclen Lo (norgestimate and ethyl estradiol)	oral contraceptive	birth control	
oxycodone and aceta- minophen	opiate (narcotic) and nonsteroidal antiinflammatory drug (NSAID) (analgesic/antipyretic) combination	moderate to severe pain	
OxyContin (oxycodone)	opiate (narcotic) analgesic	moderate to severe pain	
Patanol (olopatadine)	ophthalmic antihistamine	allergic conjunctivitis	
Paxil (paroxetine)	selective serotonin reuptake inhibitor (SSRI) (antidepressant)	depression	
Penicillin VK (penicillin V potassium)	penicillin (antibiotic)	bacterial infections	
phenazopyridine	urinary analgesic	urinary tract pain	
phenobarbital	barbiturate (sedative/hypnotic, anticonvulsant, anxiolytic)	insomnia, epilepsy, seizures, anxiety	
phentermine	anorexiant; decongestant; central nervous system (CNS) stimulant	nasal congestion, obesity, attention-deficit/hyperactivity disorder (ADHD)	
phenytoin	hydantoin (anticonvulsant)	epilepsy, seizures	
Plavix (clopidogrel)	antiplatelet agent	reduction in stroke or myocar- dial infarction risk by excessive clot prevention	
potassium chloride	potassium salt; electrolyte supplement	potassium deficiency	
Pravachol (pravastatin)	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia	
prednisone	glucocorticoid (antiinflammatory, immunosuppressant)	inflammation, immunological disorders, allergy	
Premarin (conjugated estrogens)	estrogen derivative	hormone replacement	
Prempro (estrogen and medroxyprogesterone)	estrogen/progestin	hormone replacement	
Prevacid (lansoprazole)	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)	
Prilosec (omeprazole)	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)	
promethazine and codeine	antihistamine; sedative; antiemetic antihistamine and opiate (narcotic) antitussive combination	allergy, motion sickness, nausea cold and cough	

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES
propoxyphene and acetaminophen	opiate (narcotic) analgesic and non- steroidal antiinflammatory drug (NSAID) (analgesic/antipyretic) combination	mild to moderate pain
propranolol	β-blocker	hypertension, angina pectoris, cardiac arrhythmias, migraine headache prophylaxis
Proscar (finasteride)	5α -reductase inhibitor	benign prostatic hyperplasia (BPH)
Protonix (pantoprazole)	proton-pump inhibitor (PPI) (gastric acid secretion inhibitor)	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)
Pulmicort (budesonide) inhalant	glucocorticoid (antiinflammatory, immunosuppressant)	asthma
quinapril hydrochloride	angiotensin-converting enzyme (ACE) inhibitor	hypertension, congestive heart failure (CHF)
quinine	antimalarial	malaria, nocturnal leg cramps
ranitidine	H ₂ receptor antagonist	peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD)
Rhinocort Aqua (budes- onide) nasal spray	glucocorticoid (antiinflammatory, immunosuppressant)	allergic rhinitis
Risperdal (risperidone)	atypical antipsychotic (neuroleptic)	psychoses (e.g., schizophrenia)
Seroquel (quetiapine)	atypical antipsychotic (neuroleptic)	psychoses (e.g. schizophrenia)
Singulair (montelukast)	leukotriene-receptor antagonist	asthma
Skelaxin (metaxalone)	skeletal muscle relaxant	skeletal muscle spasms and spasticity
Spiriva (tiotropium bromide) inhaler	anticholinergic	bronchospasm, as seen in bronchitis, emphysema, or chronic obstructive pulmonary disease (COPD)
spironolactone	potassium-sparing diuretic	hypertension, edema
Strattera (atomoxetine)	selective norepinephrine reuptake inhibitor (SNRI)	attention-deficit/hyperactivity disorder (ADHD)
Synthroid (levothyroxine)	thyroid product	hypothyroidism
Tamiflu (oseltamivir)	antiviral	viral infections
temazepam	benzodiazepine (hypnotic)	insomnia
terazosin	α_1 -adrenergic antagonist (antihypertensive, vasodilator)	benign prostatic hypertrophy (BPH)
tetracycline	antibiotic	bacterial infections
tizanidine	central sympatholytic (α_2 -adrenergic agonist)	muscle spasticity
Topamax (topiramate)	anticonvulsant	epilepsy (partial seizures)
Toprol-XL (metoprolol)	cardioselective β-blocker (antihypertensive, antiarrhythmic, antianginal)	hypertension, angina pectoris, congestive heart failure (CHF)
tramadol	opioid analgesic	chronic pain

NAME	CLASSIFICATION	MAJOR THERAPEUTIC USES	
tramadol and aceta- minophen	opioid analgesic and nonsteroidal antiinflammatory drug (NSAID) (analgesic/antipyretic) combination	acute pain	
trazodone	atypical antidepressant	depression	
triamcinolone	glucocorticoid (antiinflammatory, immunosuppressant)	inflammation, immunological disorders, allergy	
TriCor (fenofibrate)	fibric acid derivative	hyperlipidemia, hypertriglyc- eridemia, hypercholesterolemia	
Trileptal (oxcarbazepine)	anticonvulsant	epilepsy (partial seizures)	
trimethoprim and sulfa- methoxazole (TMP-SMX or co-trimoxazole)	antibacterial and sulfonamide (antibiotic) combination	bacterial infections	
Trimox (amoxicillin)	penicillin (antibiotic)	bacterial infections	
Tussionex (hydrocodone and chlorpheniramine)	narcotic antitussive and antihistamine combination	cough and cold	
Ultracet (tramadol and acetaminophen)	opioid analgesic and nonsteroidal antiinflammatory drug (NSAID) (analgesic/antipyretic) combination	acute pain	
Valtrex (valacyclovir)	antiviral	herpes viruses	
verapamil	calcium-channel blocker	hypertension, cardiac arrhyth- mias, angina pectoris	
Viagra (sildenafil)	phosphodiesterase (type 5) enzyme inhibitor	erectile dysfunction (ED)	
Vigamox (moxifloxacin hydrochloride)	ophthalmic solution	antibacterial	
Vytorin (ezetimibe and simvastatin)	cholesterol absorption inhibitor and HMG-CoA reductase inhibitor (statin) combination	hyperlipidemia, hypercholes- terolemia	
warfarin	anticoagulant	thromboembolic disorders	
Wellbutrin SR (bupropion)	atypical antidepressant	depression	
Xalatan (latanoprost) oph- thalmic solution	prostaglandin	glaucoma	
Yasmin 28 (drospirenone and ethinyl estradiol)	oral contraceptive	birth control	
Zetia (ezetimibe)	cholesterol absorption inhibitor	hypercholesterolemia	
Zithromax (azithromycin dihydrate)	macrolide (antibiotic)	bacterial infections	
Zocor (simvastatin)	HMG-CoA reductase inhibitor (statin)	hyperlipidemia, hypercholes- terolemia	
Zoloft (sertraline)	selective serotonin reuptake inhibitor (SSRI) (antidepressant)	depression	
Zyprexa (olanzapine) Zyrtec (cetirizine)	atypical antipsychotic (neuroleptic) antihistamine	psychoses (e.g., schizophrenia) allergy	
		OJ.	

RxList Top 300 Drugs of 2005, www.rxlist.com/top200.htm

Stedman's Medical Dictionary for the Health Professions and Nursing, 5th edition, appendix listing of Commonly Prescribed Drugs and Their Applications. Baltimore: Lippincott Williams & Wilkins, 2005.

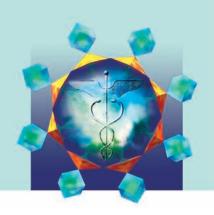


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FIGURE 3-1	Squamous cell carcinomas and basal cell carcinomas, images courtesy of The Skin Cancer Foundation, New York, NY. Signs of melanoma (A-D) courtesy of the American Academy of Dermatology.
FIGURE 3-3	A. From Bickley LS, Szilagyi P. <i>Bates' Guide to Physical Examination and History Taking</i> . 8th ed. Philadelphia: Lippincott Williams & Wilkins, 2003.
FIGURE 3-5	B and D . From Bare BG, Smeltzer SC. <i>Brunner & Suddarth's Textbook of Medical-Surgical Nursing</i> . Philadelphia: Lippincott Williams & Wilkins, 2003.
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FIGURE 6-2 White and red blood cells from Lee GR, et al. Wintrobe's Clinical Hematology. 9th ed. Philadelphia: Lea & Febiger, 1993.

FIGURE 6-4 From Lee GR, Foerster J, Lukens JN. Wintrobe's Clinical Hematology. 10th ed. Philadelphia: Lippincott Williams & Wilkins, 1999.

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- From McClatchey KD, Alkan S, Hackel E, et al. Clinical Laboratory Medicine. 2nd ed. Baltimore: Lippincott Williams & Wilkins, 2001:538.

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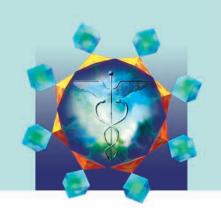
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P-1	P-6
a- an-	bi-
P-2 ab-	brady-
P-3 ad-	circum- peri-
ante- pre- pro-	con- syn- sym-
anti- contra-	P-10 de-

two or both <u>bi</u> lateral	without <u>a</u> phagia <u>an</u> esthesia
slow <u>brady</u> cardia	away from abnormal
around <u>circum</u> cise <u>peri</u> osteal	to, toward, or near adhesion
together or with congenital syndactylism symbiosis	before <u>ante</u> partum <u>pre</u> mature <u>pro</u> active

from, down, or not degenerate

against or opposed to

<u>anti</u>toxic <u>contra</u>indicated

P-11 dia- trans-	P-16 epi-
P-12	P-17 eu-
P-13	hemi- semi-
ecto- exo- extra-	P-19 hyper-
en- endo- intra-	hypo-

upon

<u>ep</u>idermal

across or through

<u>dia</u>meter <u>trans</u>dermal

good or normal

<u>eug</u>enic

painful, difficult, or faulty

<u>dys</u>function

half

<u>hemi</u>cephalic semilunar out or away

evacuate
eccentric
excise

above or excessive

<u>hyper</u>thermia

outside

<u>ecto</u>morphic <u>exo</u>crine extravasation

below or deficient

hypothermia

within

<u>en</u>capsulate <u>endo</u>scope intradermal

P-21 inter-	mono- uni-
P-22 macro-	P-27
P-23 meso-	P-28 Oligo-
P-24 meta-	P-29 pan-
P-25 micro-	P-30 para-

one <u>mono</u> cyte <u>uni</u> lateral	between <u>inter</u> action
new <u>neo</u> plasia	large or long <u>macro</u> cyte
few or deficient oligotrophy	middle <u>meso</u> morphic
all <u>pan</u> acea	beyond, after, or change <u>meta</u> stasis <u>meta</u> morphosis
alongside of or abnormal <u>para</u> medic <u>para</u> noia	small <u>micro</u> scope

P-31 poly- multi-	sub- infra-
P-32 post-	super- supra-
P-33 quadri-	P-38 tachy-
P-34 re-	P-39 tri-
retro-	P-40 ultra-

below or under <u>sub</u> cutaneous <u>infra</u> umbilical	many <u>poly</u> phobia <u>multi</u> cellular
above or excessive supernumerary suprarenal	after or behind postoperative
fast	four
<u>tachy</u> cardia	<u>quadri</u> plegia
three	again or back
<u>tri</u> angle	<u>re</u> activate
beyond or excessive	backward or behind
ultrasonic	retrograde

-ac -al -ar -ary	-centesis
-eal -ous -ic -tic	-desis
-algia -dynia	s-7 -e
-ation	-ectasis
-cele	-ectomy

puncture for aspiration (suction removal)

abdominocentesis

cardi<u>ac</u> ped<u>al</u> glandul<u>ar</u> pulmon<u>ary</u>

binding

arthro<u>desis</u>

pertaining to (adjectival endings)

esophag<u>eal</u> fibr<u>ous</u> tox<u>ic</u> cyano<u>tic</u>

noun marker

erythrocyt<u>e</u>

pain

cephal<u>algia</u> cephalo<u>dynia</u>

expansion or dilation

angi<u>ectasis</u>

process

extravasation

excision (removal)

append<u>ectomy</u>

pouching or hernia

gastro<u>cele</u>

s-10 -emia	s-15 -iasis
s-11 -genesis	-icle -ole -ula -ule
-gram -graph -graphy	s-17 -itis
-ia -ism	s-18 -ium
-iatrics -iatry	-logy -logist -ist

formation or presence of

lithiasis

blood condition

hyperlip<u>emia</u>

small

ventr<u>icle</u> arteri<u>ole</u> mac<u>ula</u> pust<u>ule</u>

origin or production

pathogenesis

inflammation

appendicitis

record

sonogram

instrument for recording

sono<u>graph</u>

process of recording

sonography

structure or tissue

epigastr<u>ium</u> pericard<u>ium</u>

condition of

pneumon<u>ia</u> perfection<u>ism</u>

study of

histo<u>logy</u>

one who specializes in the study or treatment of oncologist

one who specializes in therapist

treatment

ped<u>iatrics</u> psych<u>iatry</u>

s-20	s-25
-lysis	-oma
s-21 -malacia	s-26 -osis
s-22	s-27
-megaly	-penia
-meter -metry	s-28 -pexy
s-24	-phil
-oid	-philia

tumor
carcin <u>oma</u>

breaking down or dissolution

hemo<u>lysis</u>

condition or increase

scler<u>osis</u> leukocyt<u>osis</u> **softening** osteomalacia

abnormal reduction

pancytopenia

enlargement

hepatomegaly

suspension or fixation

nephropexy

instrument for measuring spirometer

process of measuring spirometry

attraction for

baso<u>phil</u> pedo<u>philia</u> resembling

lip<u>oid</u>

s-30 -plasty	s-35 -rrhea
s-31 -poiesis	s-36 -rrhexis
s-32 -ptosis	-scope -scopy
-rrhage -rrhagia	s-38 -spasm
s-34 -rrhaphy	s-39 -stasis

discharge surgical repair or reconstruction amenorrhea rhinorrhea rhinoplasty formation rupture cardiorrhexis hemopoiesis instrument for examination falling or downward endo<u>scope</u> displacement process of examination nephroptosis endo<u>scopy</u> to burst forth involuntary contraction hemo<u>rrhage</u> menorrhagia vasospasm

stop or stand

hemostasis

suture

osteo<u>rrhaphy</u>

s-40 -stomy	
s-41 -tomy	
-y	

creation of an opening colostomy
incision Iaparo <u>tomy</u>
condition or process of adenopath <u>y</u>

CF-1	CF-6
abdomin/o lapar/o	arthr/o
cF-2 acr/o	carcin/o
cF-3 aden/o	cardi/o
cF-4 aer/o	cephal/o
angi/o vas/o vascul/o	col/o colon/o

joint <u>arthro</u> desis	abdomen <u>abdomin</u> al <u>laparo</u> scopy
cancer <u>carcino</u> genic	extremity or topmost acrodynia acrophobia
heart	gland
<u>cardio</u> logist	<u>aden</u> oma
head	air or gas
<u>cephal</u> ic	<u>aero</u> bic

colon (large intestine)

<u>colo</u>stomy <u>colono</u>scopy vessel

angioplasty vasectomy vascular

crin/o	cF-16 erythr/o
cyan/o	cF-17 esophag/o
cyt/o	cF-18 esthesi/o
derm/o dermat/o cutane/o	cF-19 fibr/o
cF-15 enter/o	cF-20 gastr/o

red	to secrete
<u>erythro</u> cyte	endo <u>crino</u> logy
esophagus <u>esophag</u> itis	blue <u>cyano</u> tic
sensation	cell
an <u>esthes</u> ia	<u>cyto</u> logy
fiber <u>fibr</u> oma	skin hypo <u>derm</u> ic <u>dermato</u> logist <u>cutane</u> ous
stomach	small intestine
gastric	enterospasm

cF-21 gen/o	CF-26 hydr/o
cF-22 gynec/o	CF-27
hem/o hemat/o	CF-28
cF-24 hepat/o	CF-29
cF-25 hist/o	cF-30 melan/o

water <u>hydro</u> phobia	origin or production carcino <u>gen</u> ic
white <u>leuko</u> cyte	woman g <u>yneco</u> logy
fat <u>lip</u> oid	blood <u>hemo</u> lysis <u>hema</u> toma
stone <u>lith</u> iasis	liver <u>hepato</u> megaly
black <u>melan</u> oma	tissue <u>histo</u> genesis

CF-31	CF-36
morph/o	neur/o
my/o muscul/o	cF-37
nas/o rhin/o	cF-38
cF-34 necr/o	cF-39
nephr/o ren/o	cF-40 oste/o

nerve neuritis	form <u>morpho</u> logy
tumor or mass oncology	muscle <u>my</u> oma <u>muscul</u> ar
mouth <u>or</u> al	nose <u>nas</u> al <u>rhin</u> itis
straight, normal, or correct orthopedic	death <u>necr</u> osis
bone osteogenic	kidney <u>nephr</u> ectomy <u>ren</u> al

CF-41	CF-46
path/o	plas/o
cF-42 ped/o	pneum/o pneumon/o
cf-43 phag/o	cF-48 psych/o
cf-44 phas/o	cF-49 py/o
cf-45 phob/o	cf-50 scler/o

formation	disease
dys <u>plas</u> ia	<u>patho</u> logy
air or lung	child or foot
pneumogram	<u>ped</u> iatrics
pneumonitis	<u>ped</u> al
mind	eat or swallow
psychiatry	phagocyte
pus	speech
<u>pyo</u> rrhea	dys <u>phas</u> ia
hard <u>scler</u> osis	exaggerated fear or sensitivity hydro <u>phob</u> ia photo <u>phob</u> ia

cf-51	tox/o toxic/o
cF-52 sten/o	cF-55 troph/o
therm/o	ur/o urin/o

poison <u>tox</u> emia <u>toxico</u> logy	sound <u>son</u> ic
nourishment or development hyper <u>troph</u> y	narrow stenosis
urine urology urinary	heat <u>thermo</u> meter